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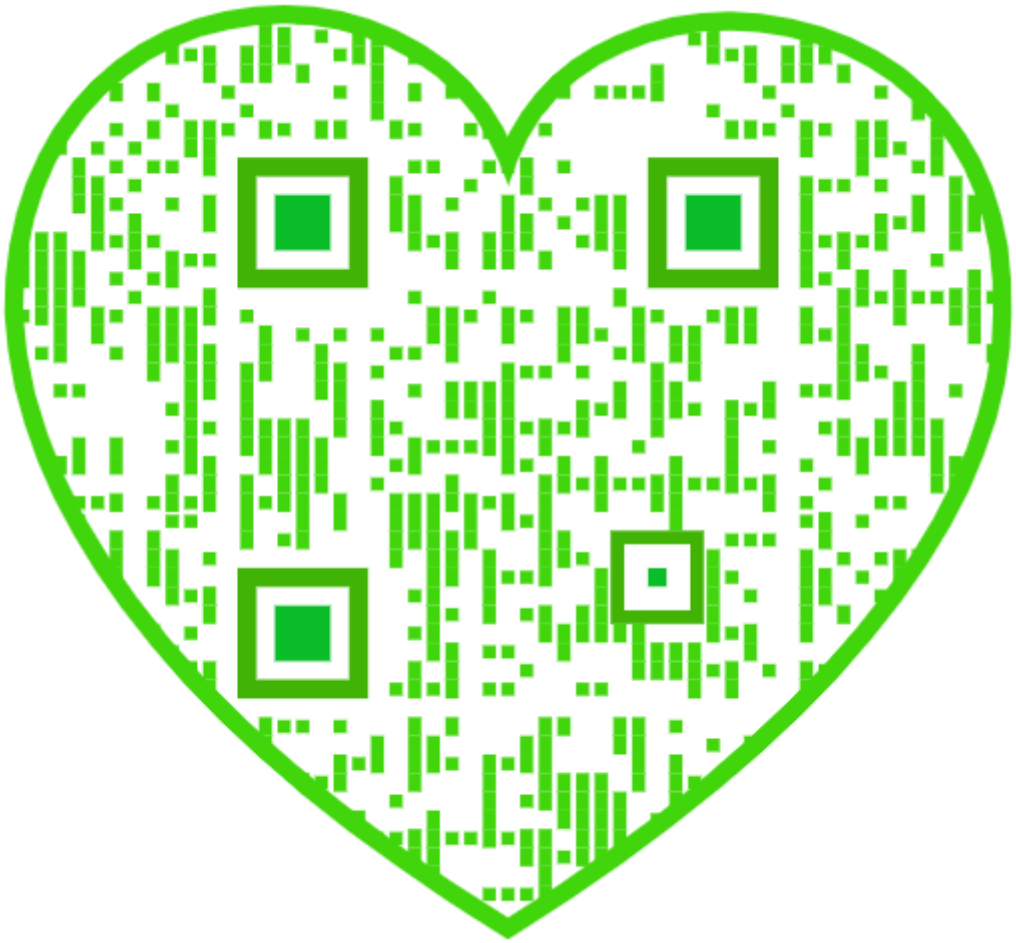

ROCK CRUSHING MACHINERY

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ROCK CRUSHING MACHINERY

COMPLETELY EQUIPPED PLANTS *for the* CRUSHING *and* HANDLING *of* ROCK *for* ALL PURPOSES

POWER AND MINING MACHINERY COMPANY

WORKS AND GENERAL OFFICES
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POWER AND MINING MACHINERY COMPANY

LEADING BUILDERS OF

Rock Crushing Machinery; Mining Machinery; Cement-Making Machinery; Silver-Lead, Copper and Pyritic Smelting Works; Sampling Works; Copper Bessemerizing Plants; Stamp Mills; Cyanide Mills; Chlorination Mills; Wood Impregnating Plants; Power Transmitting Machinery; Loomis-Pettibone Gas Generators; Suction Gas Producers.

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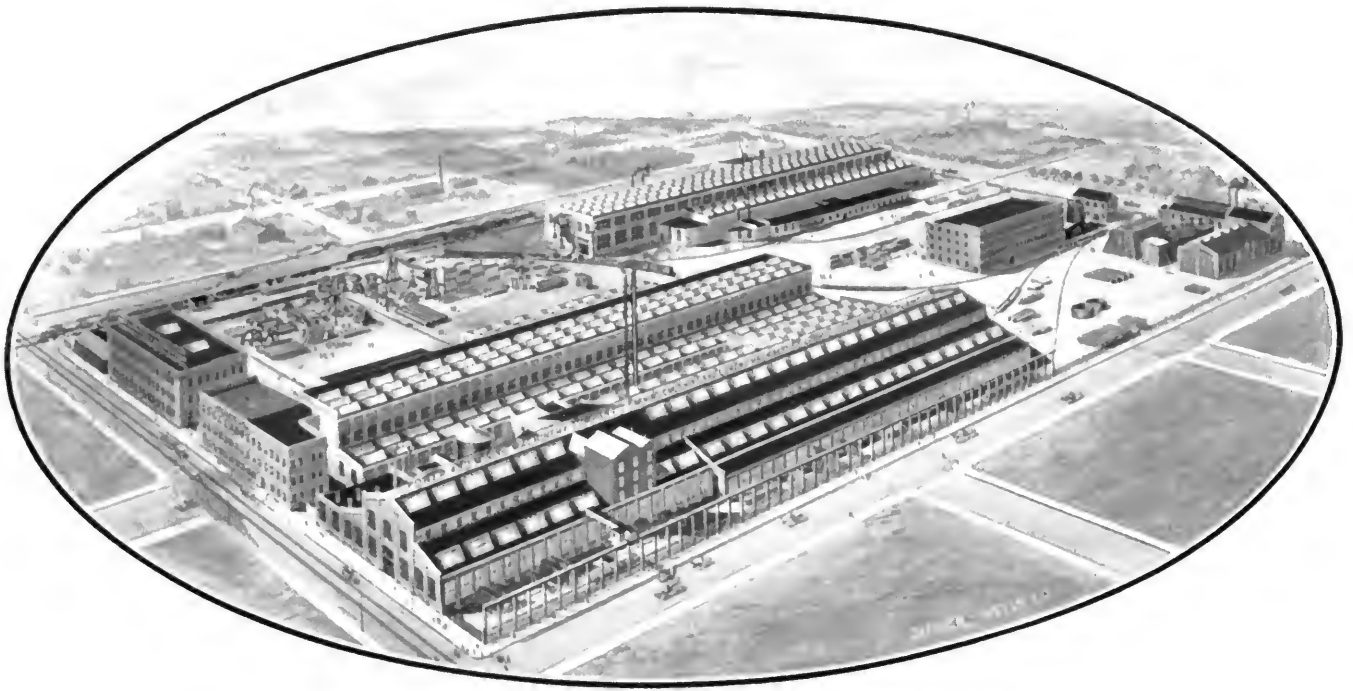


Works of the Power and Mining Machinery Company, Cudahy (Suburb of Milwaukee), Wis., U. S. A.

FOREWORD

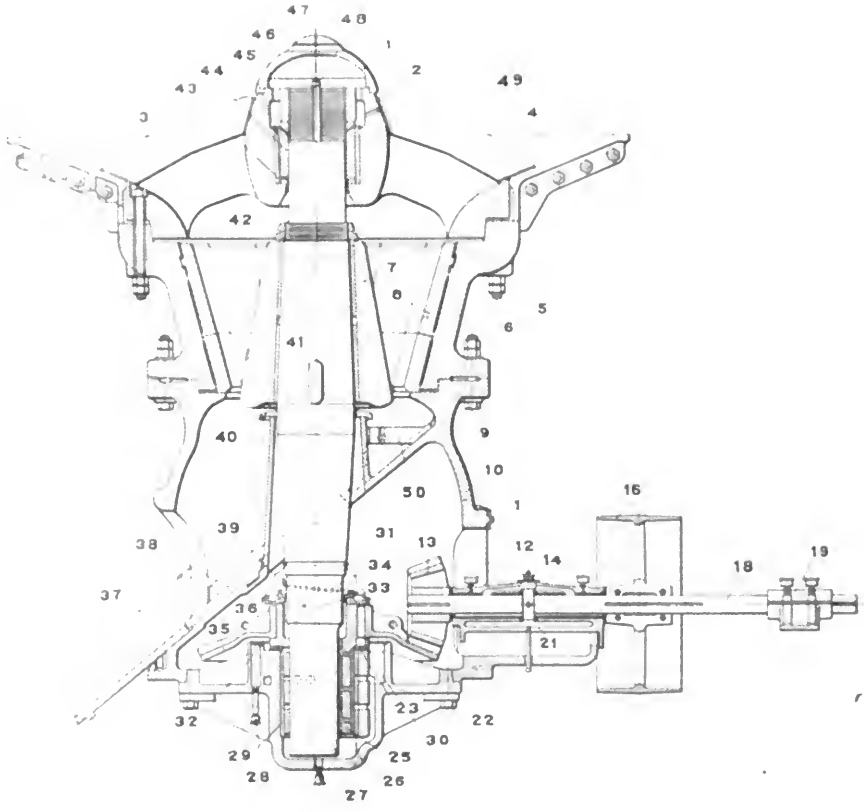
THE history of the McCully Gyratory Rock Crusher is the history of progress and improvement in crusher designing and building, and in presenting this Catalog of Rock Crushing Machinery to the trade it will not be amiss to first say a few words regarding the development of this now famous machine.

This Crusher was designed and placed on the market by Mr. Robert McCully, of Philadelphia, Pa., who essayed to produce a Crusher that would combine great capacity, durability and simplicity of construction and at the same time crush evenly and uniformly with the least possible consumption of power. The designer succeeded in producing such a machine and, with the improvements since made from time to time, this Crusher has maintained a position far in advance of all competitors.

Following the introduction of the modern features of the McCully Crusher, attempts were made by imitators to cover by substitution those special features of the McCully that were recognized at once by discerning mechanics as being of the utmost importance. The utter failure to produce a satisfactory Crusher embodying these substitutions has resulted, however, only in increasing the prestige of the McCully.

Notwithstanding the fact that this Crusher has not been widely advertised, through its own intrinsic merits it has become well and favorably known, and is now in successful operation throughout the United States and many foreign countries.

We own the exclusive right to manufacture the McCully Rock and Ore Crushers in the United States and all foreign countries, and we will be governed accordingly by [illegible] that no [illegible] can be made.



List of Parts

1	Spider Cap	18	Countershaft	50	Diaphragm Liner
2	Oil Canal	19	Outboard Bearing	36	Oiling Collar
3	Spider	21	Countershaft Bearing	37	Discharge Spout
4	Hopper	22	Bolt for Bottom Plate	38	Wearing Plates
5	Spider Bolt	23	Brass Wearing Ring	39	Canvas Hood
6	Top Shell	25	Eccentric	40	Dust Collar
7	Head	26	Bottom Plate	41	Feather Key in Main Shaft
8	Concaves	27	Drain Pipe	42	Lock Nuts on Head
9	Middle Joint Bolt	28	Overflow Pipe	43	Wearing Ring
10	Lower Shell	29	Steel Bushing	44	Sleeve
11	Door Pin	30	Oil Chambers	45	Steel Bushing
12	Door	31	Main Shaft	46	Annular Oil Ring
13	Bevel Pinion	32	Dust Plate	47	Adjusting Nut
14	Cap for Countershaft Bearing	33	Oil Cup	48	Key
15	Band Wheel	34	Oiling Collar Chain	49	Shield for Spider
		35	Bevel Wheel		

General Description, McCully Gyratory Crusher

THE illustration on opposite page gives a comprehensive idea of the with the following descriptive matter, we believe will make clear details of construction of the McCully Gyratory Crusher which, our claims for superiority in design, materials, workmanship, efficiency and economy.

The body of the Crusher consists of four main parts, i. e., lower shell (10), top shell (6), spider (3) and hopper (4).

The main shaft (31) which carries the crushing head (7), hangs suspended from the spider at a pivot point (43), while the lower end is made to gyrate in a circular or rolling movement by the eccentric (25). The bevel wheel (35) is keyed to this eccentric, and motion is imparted to it by the pinion (13), which is keyed to the countershaft (18).

The movement of the main shaft may be simply illustrated by holding a pencil in an upright position, the top end being held firmly, while the bottom is moved in a circle. The shaft, while being actuated in a similar manner by the eccentric, is free to rotate in either direction about its axis, thus eliminating all abrasive action in the crushing process, which is by pressure only.

Owing to the circular or rolling movement of the crushing head, it is continually approaching successively every point of the concaves or liners (8), while it is receding from another point, therefore the crushing is continuous instead of intermittent as in crushers of the reciprocating jaw type.

The material to be crushed is fed into the hopper and, owing to the exceptionally wide angle of the spider rim, passes directly into the receiving opening between the crushing head and the concaves, thus eliminating any tendency to clog the feed. When reduced to the required size, the product falls through onto the inclined diaphragm (38) and discharges through the spout (37) by gravity.

McCully Gyratory Crusher—Side Discharge.
(Left Hand.)

Supported Type Crushers

IN gyratory crushers of the supported type, the entire weight and downward thrust of the head and shaft is carried on a step bearing at the end of the main shaft, which is the point of greatest gyration. Therefore, the burden of supporting the weight and downward thrust of the head and shaft, as well as the duty of imparting the crushing motion, is all centered at one point within the compass of the eccentric bearing.

The excessive friction caused by the sliding action of the main shaft on the supporting step imposes an undue strain thereon, and results in heating and the consequent consumption of an excessive amount of power in this type of crusher. The heating is ultimately communicated through the shaft to the eccentric, resulting in the melting out of the babbitt lining and causing delay for repairs.

In the early stages of the development of the Gyratory Crusher, and before fine crushing was required, the supported shaft type of crusher fulfilled all requirements, but the steady and increasing demand for finer crushed product has necessitated a design which will stand the most severe work.

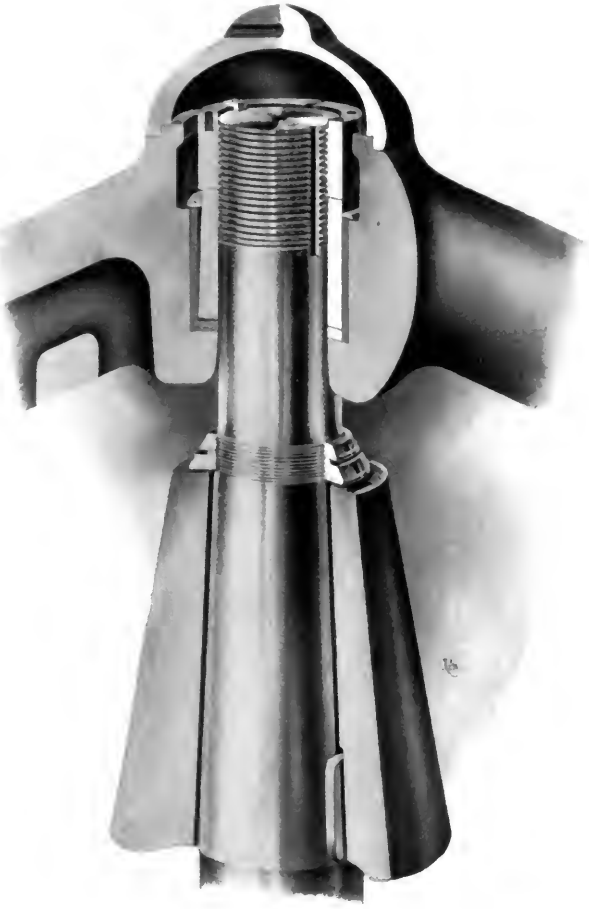
Suspended Type Crushers

The McCully Crusher has never been built other than with the main shaft and crushing head suspended from the spider at the fulcrum point, or point of no gyration. While this feature is of great advantage in all sizes, it is an absolute necessity in the larger sizes, and is found only in the McCully. It is covered by broad letters patent.

Side Discharge

The use of the side discharge crushers in some cases is of great advantage in simplifying the arrangement of the plant. With this type of crusher the back gear drive is omitted, and the belt for driving the screen and elevator can be run direct from the crusher countershaft, line shaft or engine.

The hand wheel may be set on the right or left hand side of the crusher when looking into the discharge spout. This feature does not in any way compromise the McCully Crusher as there is ample room under the inclined diaphragm for the bevel pinion, and the opening in the main frame permits the removal of the countershaft bearing and pinion with the same convenience as with the regular style of crushers. These conditions are found only in the McCully. (See illustration on opposite)



Head of Main Shaft Showing Method of Adjustment.

Points of Superiority in McCully Crushers

THE features in the construction of the McCully Gyratory Crusher for which we claim superiority over any other make or type of gyratory, are in the following:

Suspension of Shaft

The suspension of the main shaft and head results in a great saving of power over the supported type of Crusher, from the fact that the suspension sleeve resting on the steel supporting ring has a perfect rolling motion without any sliding or grinding action whatever.

Suspension at Fulcrum Point

To accomplish this result the shaft must be suspended at the fulcrum point as in the McCully. The sliding action at the point of suspension, when it is above or below the fulcrum point, is open to the same objection as the supported type. Every attempt to suspend the shaft from any other point than the fulcrum, or the point of no gyratory motion, has proven a complete failure, owing to the excessive breakage of parts and the increased power required.

Ease of Adjustment

An important and original feature in the McCully Crusher is that the vertical adjustment of the main shaft is accomplished without changing the set angle of the shaft. This adjustment is necessary to regulate the size of product (to a limited extent), and to compensate for wear of the head and concaves. (Note illustration opposite.)

Two Arm Spider

The necessity of the two-arm spider came with the demand for machines of great capacity and large receiving openings. To get the largest possible area of receiving openings was the aim of all builders, and in some cases strength and rigidity have been sacrificed to obtain "talking points." In the McCully Crusher the strength of the ring and the bearing surface where the spider is joined to the shell have been greatly increased, while the angle of the receiving opening has been widened to practically form a continuous surface with the hopper. The results have been most gratifying, as the feeding capacity has been greatly increased, and without the use of weak inner hopper sections and a multiplicity of rods and bolts which form imperfect joints which are insufficiently strong to withstand the work.

McCully Gyratory Crusher—Standard Discharge.
(Showing Bottom Dropped.)

The high arched arms in the McCully Crusher permit the largest stone which the crusher will receive to pass freely under, thus utilizing all the receiving space and giving the maximum capacity to the crusher. This result has been accomplished in the McCully only, and without weakening the structure of the machine. In fact, there is no vibration of the spider hub in the McCully, such as can be readily detected in machines where strength has been sacrificed to obtain "talking points," and where broken spiders and suspension nuts are the rule rather than the exception.

In McCully Crushers of No. 8 size and larger, the top of the spider arms is protected by removable and reversible cast-steel shields, thereby preventing wear. The spiders are also fitted with a removable bushing in the hub.

Drop Bottom Plate

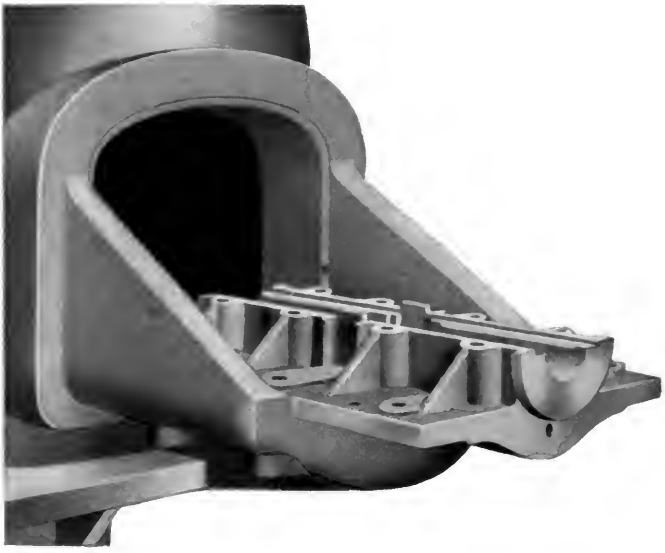
Another feature original with the McCully is the arrangement of the bottom plate to drop out from below the crusher, thus effectively doing away with the necessity of raising the entire machine to get at the working parts for repairs or inspection. To this feature was added the successful oiling device (described later), and finally the introduction of a removable bushing in the bore of the bottom plate.

The oil chamber surrounding the hub of bottom plate is covered by a steel dust-plate, so arranged that it may be removed for cleaning purposes when so desired. A brass wearing ring is provided between the under side of the bevel wheel and the upper side of the bottom plate hub for maintaining the proper mesh of gears. These features have been imitated more or less, but the McCully is the only crusher in existence embodying them all in an unequalled working combination.

Steel Gearing

The bevel wheel and pinion on all McCully Crushers are made of steel. The extreme simplicity and mechanical accuracy of the device by which the bevel wheel is attached to, or detached from, the eccentric, will at once appeal to crusher operators. This operation can be accomplished in a few minutes and without skilled labor, as no rivets or other complicated devices are used.

The marked superiority of the steel gears used in the McCully over the cast-iron gears used in other makes of gyratories, is recognized by all users, and is a strong point in favor of the McCully Crusher.



Detachable Countershaft Bearing

Steel Gearing.

Detachable Countershaft Bearing

Special attention is called to our independent double countershaft bearing, which is made interchangeable and machined to gauges, as is also the shell extension upon which it rests, therefore they cannot get out of line. This permits of its removal to a convenient spot for repairs, a feature not found in other crushers. If desired, an extra bearing, babbitted complete and ready for service, may be kept in stock, permitting a change made in a shorter time and with less labor than by any other possible method. This feature of accessibility cannot be overestimated,

The countershaft bearing and its seating on the extension are both machined to templet, allowing its position on the shell extension to be automatically obtained.

The space underneath the bearings forms a large oil reservoir, the oil being automatically supplied to the bearings. Grease cups are also provided in case it is desired to lubricate by this method.

We furnish a babbitting mandrel with each machine for use in forming the bearings and bearing faces at both the inner and outer ends, which insures the proper position of the bevel pinion and band wheel.

Oiling Device

The oiling device for lubricating the eccentric in the McCully Crusher retains all the good features of the submerged type of bearing, and eliminates all the bad ones of the mechanically operated device. An ample reservoir is provided outside of the main bearing in addition to that available in the bearing. This reservoir of oil entirely surrounds the eccentric bearing in the bottom plate, and acts as a cooling agent in case of excessive strain due to very hard work. It also permits of a very rapid, free and continuous circulation of the oil, and has been one of the strong factors in the complete success of the McCully Crusher.

Dust Proof Protection

The oiling ring, which rests on top of the eccentric bearing and surrounds the main shaft where it enters the eccentric, is fastened to the main shaft and is driven in unison with it. The fastening is flexible, and permits of adjusting the shaft up and down without any attention to the oiling ring. The two grooves in the upper surface of the ring form oil reservoirs for oiling the bearing against shaft and the bearing on top of the eccentric.

No. 10 McCully Crusher.

A canvas dust-proof hood is fastened to the main shaft in a groove over the oiling ring. This hood is built on a heavy wrought ring which rests on the outer rim of the oiling collar. Both the oiling ring and the canvas hood are fastened to the main shaft, which prevents any wearing of the joints, and as they travel very slowly and in unison with the main shaft, there is no tendency to displace either one. In fact, this slow movement of the main shaft in a circular direction permits of the canvas hood being raised for inspection of the bearing while the machine is in operation.

The protecting collars are at all times in the same position on the shaft, and prevent dirt or dust from reaching the bearing. In the larger size crushers, however, we use a telescoping sealing device instead of the canvas hood, which effectively excludes dust from the eccentric bearing.

Crushing Head

Crushing heads for McCully Crushers are made of either chilled-iron or manganese steel, and with either smooth or corrugated surfaces. Where the material to be crushed is soft and not of a cutting nature, chilled-iron heads and concaves are recommended, but for very hard, abrasive material, manganese steel or its equivalent is preferable.

Chilled-iron heads are furnished solid and bored their entire length to fit the shaft. They are secured against turning by a leather key, and are held down on the shaft by two nuts. For crushers of No. 10 size and larger the heads are zinced to fit the shaft, and fitted with self tightening nuts, which force the head down on the taper of the shaft. With this arrangement no key is used.

Manganese steel heads are made with a cast-iron core or center fitted to the shaft, on the outside of which is a manganese steel shell or mantle. This mantle is zinced on the inside to fit the core, and the top is ground perfectly true to form a seat for the self-tightening nut, which latter is necessary owing to the loosening of the mantle by peening and expansion of the steel. With this construction it is only necessary to renew the mantle when the head is worn.

The peening action on the heads of small crushers is not particularly troublesome, consequently the heads are made solid, the same as the chilled iron heads.

Crushing Plant Installed for United States Government at Ancon Hill, Panama, Consisting of One 36-inch Mammoth and Four No. 6 McCully Crushers.

POWER & MINING MACHINERY CO.

Concaves or Liners

Either chilled-iron, manganese steel, or a combination of both, is used, depending upon the nature of the material to be crushed. In some instances the concaves are made with the upper two-thirds of chilled-iron and the lower one-third of manganese steel. Each type has its particular advantages under certain conditions, and we are always ready to advise with customers as to the adaptability of the different types, basing our judgment on our extensive experience in this line.

To prevent the concaves from working up when set in the machine, a rib is cast on the back near the upper end and projecting into a groove formed in the top shell to receive it. By this method the concaves are strengthened at a vital point, instead of being cut away and weakened at the extreme top end to form a shoulder to hold concaves down in place. This is a small point, but a very important one nevertheless, as broken concaves leave a ledge for the stone to lodge against, and have been the cause of complaint against machines having the weak concaves.

Material and Workmanship

The material entering into the construction of the McCully Crusher are those proven by long experience to be the best adapted for the work to be performed. Efficiency and durability have not been sacrificed in a single piece, in an endeavor to produce something cheap.

All parts of the crusher are machined to gauges and templets to insure the accurate fit of duplicate parts. The workmanship and materials used are always up to the high standard maintained by us, and are so guaranteed to our customers.

Stock on Hand

A stock of completed crushers and finished duplicate parts are always carried on hand, thus insuring the prompt delivery of all orders. A careful record is kept of each machine and all repairs. Comparison of orders for repair parts with this record lessens the liability of errors in filling and shipping.

Equipment

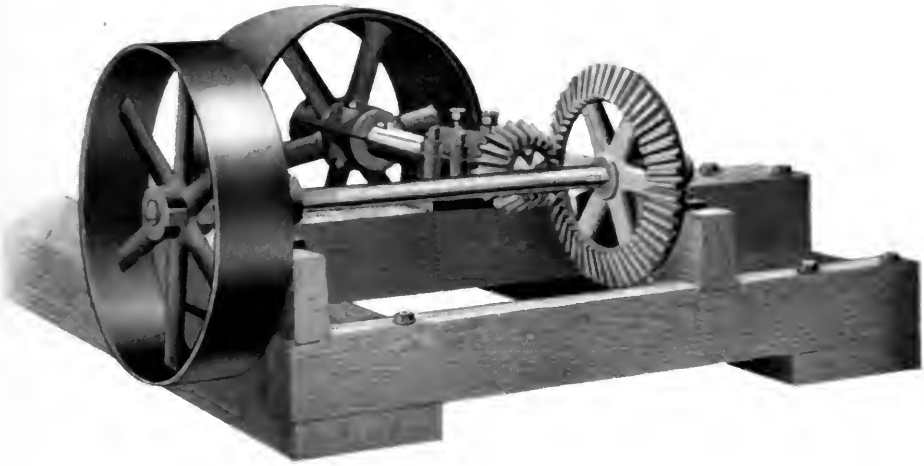
The following parts constitute the regular outfit furnished with each crusher ordered, unless otherwise specified:

1 Narrow Key Concave.
1 Set Babbitting Sleeves for eccentric.
1 Babbitting Mandrel for double countershaft bearing, with two face collars.
1 Set of two Lowering Rods for drop bottom plate.
1 Eye Bolt for handling main shaft.
2 Eye Bolts for handling eccentric.
1 Special Spanner for adjusting nut.
1 Set of wrenches for large bolts.
1 Set of oil pipes and fittings.
1 Set foundation bolts and plates for masonry or timber.

Lubricating Oil

Only the heaviest grades of mineral oil should be used on McCully Crushers. These oils are sold under the name of "Crusher" or "Fireproof" oils.

We are prepared to furnish these oils at the lowest price consistent with quality.



Back Gear Driving Connections

OUR Steel Back Gear Driving Connections illustrated above is a very simple and convenient arrangement for driving elevators and screens, and wherever it can be introduced, saves considerable room and expense in the building of a crushing plant.

As will be noted, the pinion is attached to the main countershaft of the crusher, and transmits power to the bevel wheel, which is carried on an independent countershaft to which is attached a pulley on which a belt is run leading to the elevator or screen. Both the bevel wheel and pinion are made of steel to insure long wear.

The back gear countershaft is supported by flat boxes set on the timbering, which is a more rigid construction than the overhanging bracket commonly used, and is susceptible to adjustment. Also, it can be installed and adjusted by any ordinary mechanic, a feature which will be appreciated by those who have tried to adjust the overhanging brackets.

We furnish the iron work only for back gear driving connections for crushers of the following sizes:

Size of Crushers	1	2	3	4	5	6	7½	8	9
R. P. M. Back Gear Shaft	240	230	210	190	180	170	160	150	130

Size of Product

THE size of broken stone, commercially speaking, is determined by the size of ring through which it can be passed by hand, and all our calculations are based on this standard of measurement. To produce stone of a given size of ring will, of course, require a somewhat larger perforation in a revolving screen than the given size of ring, owing to the angle of the screen plate at the point where the stone passes through. For fine crushing a smooth head is generally used, and a ribbed or corrugated one is preferable where it is desired to produce as little dust as possible.

Schedule of Relative Sizes of Stone and Screens

Size of Cube	Size of Ring	Size of Revolving Screen Perforation
¼ inch	⅜ inch	½ inch
½ inch	¼ inch	⅞ inch
¾ inch	1 inch	1¼ inch
1 inch	1½ inch	1¼ inch
1¼ inch	1¼ inch	2¼ inch
1½ inch	2 inch	2½ inch
1¾ inch	2½ inch	3 inch
2 inch	2¼ inch	3½ inch
2½ inch	3½ inch	4½ inch
3 inch	4 inch	5 inch
3½ inch	5 inch	6 inch

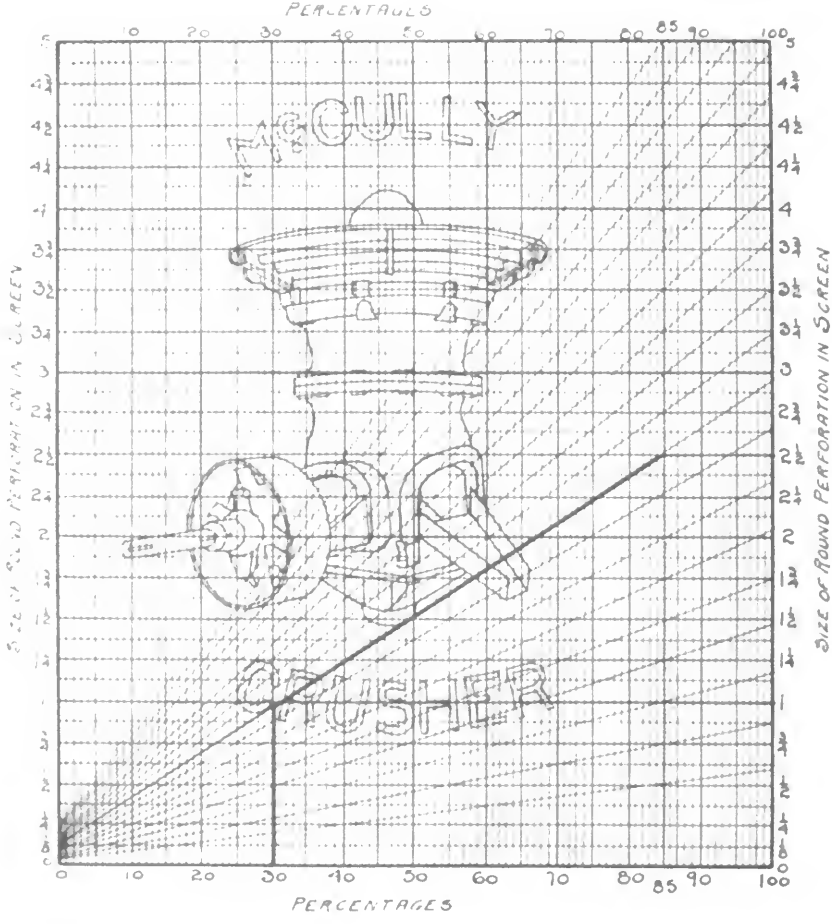
Table of Dimensions, Weights, Capacities and Power Required

Size of Crusher	Size of each Feed Opening	Finest Setting		Coarsest Setting		Size of Driving Pulley	Revolutions per Minute	Horse-power of Engine Required		Weight of Crusher Pounds
		Smallest Size of Product	Capacity in Tons 2000 lbs. per Hour	Largest Size of Product	Capacity in Tons 2000 lbs. per Hour			*		
No.	Inches	Inches	Tons	Inches	Tons					Pounds
1	5x 20	$\frac{3}{8}$	4.5	$1\frac{7}{8}$	8.5	18x 6	600	4	6	7,000
2	6x 25	1	6.5	$2\frac{1}{4}$	12.5	20x 8	575	6	10	10,200
3	7x 28	$1\frac{1}{4}$	11	$2\frac{3}{4}$	25	22x10	525	10	15	17,000
4	8x 31	$1\frac{1}{2}$	20	$3\frac{1}{2}$	18	28x12	475	12	20	23,000
5	10x 40	$1\frac{3}{4}$	30	$4\frac{1}{4}$	75	30x14	450	20	25	36,500
6	12x 44	2	50	$4\frac{1}{2}$	120	34x16	425	25	40	48,000
$7\frac{1}{2}$	15x 55	$2\frac{1}{2}$	80	5	180	40x18	400	45	70	71,500
8	18x 68	$2\frac{3}{4}$	110	$5\frac{1}{2}$	250	44x20	375	65	100	100,000
9	21x 76	3	160	6	350	52x20	350	100	140	160,000
10	24x 84	$3\frac{1}{2}$	210	$6\frac{1}{2}$	450	52x24	350	115	160	170,000
11	27x 92	4	260	7	550	52x24	350	130	180	180,000
Mammoth	36x130	5	600	8	1100	66x31	300	200	250	** 405,000
Mammoth	42x136	$5\frac{1}{2}$	700	9	1300	66x33	300	225	280	** 425,000

*The table of horse-power required to drive the crushers is not intended to cover that necessary to drive auxiliary machinery in connection therewith, but in most cases it would be sufficient for simple connections.

**The weights of Mammoth Crushers vary according to the type of hopper used, etc.

** The Mammoth Crushers are made with either single or double discharge spouts as desired.


PERCENTAGES
0 10 20 30 40 50 60 70 80 85 90 100
SIZE OF ROUND PERFORATION IN SCREEN
JACULY
CRUSHER
PERCENTAGES
0 10 20 30 40 50 60 70 80 85 90 100
SIZE OF ROUND PERFORATION IN SCREEN

Percentages of Product Through Varying Perforations

IN designing large crushing plants it is necessary to know the percentages of the different size particles in the product delivered by the first breaker, in order to determine the size and number of the auxiliary crushers. By compiling a large amount of data we found that the results from different machines were uniform, and could be plotted in a diagram, as shown on the opposite page. We have used this diagram extensively and found it very reliable.

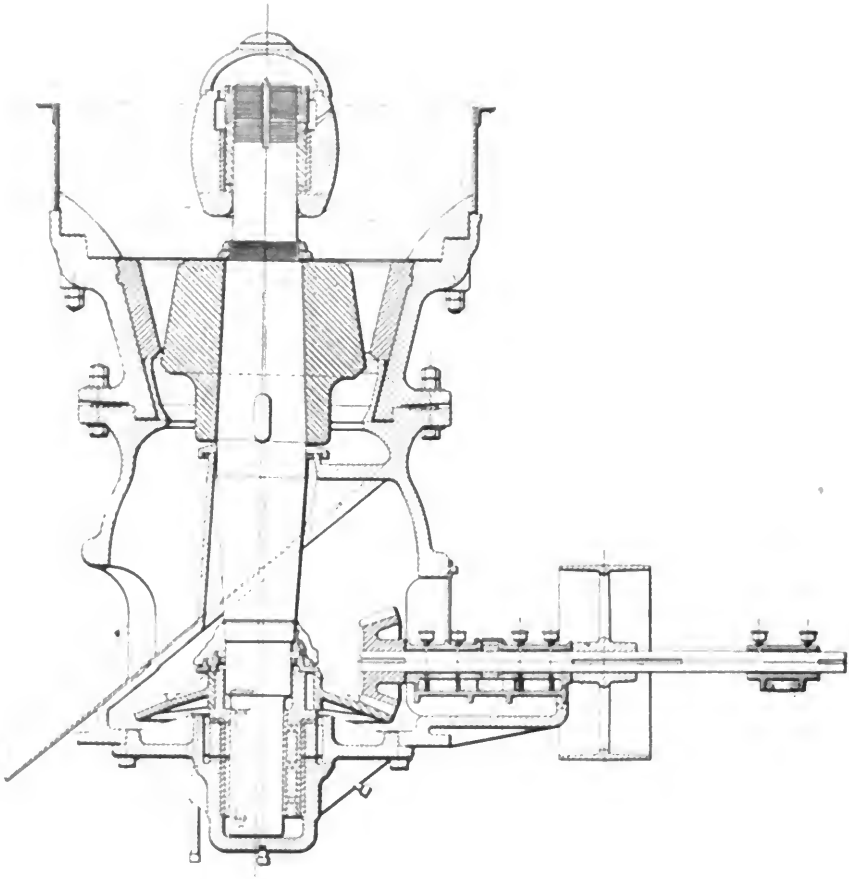
This diagram can be used to determine the proportions in the products made by jaw crushers and rolls, as well as for gyratory machines, without modification. By consulting it the Superintendent of a crushing plant can readily determine the percentages of a certain size product from any crusher or screen. The following is a description of the diagram, and we also give an example to illustrate its use:

The horizontal lines represent the different sizes of perforations in the screen; the vertical lines indicate the percentages of material which will pass through the screen. The diagonal lines were drawn through the points taken from the tabulated data, so that the intersections of the diagonals with the horizontal and vertical lines show the percentage of that size material in the product of the crusher to which the diagonal corresponds.

It was found that crushers will make less fines if they are set so that 15 per cent. of the product is larger than the required size. This oversize is usually recrushed by returning it to the same machine or to smaller breakers. We therefore made the intersections of the diagonals with the horizontals come exactly on the vertical representing 85 per cent., so as to make the diagram more readily applicable to the usual adjustment of crushers. The diagonal corresponding to any adjustment or setting is found passing through the intersection of this 85 per cent. line with the horizontal corresponding to the same size of screen.

To determine how much material will pass through a 1" screen when the crusher is adjusted for a 2" screen, find the horizontal marked 2", follow it to its intersection with the heavy line marked 85 per cent. The diagonal passing through this point is the diagonal corresponding to a 2" adjustment. Follow this diagonal till it intersects the horizontal marked 1": the vertical through this point is 31, hence 31 per cent. of the material will pass through a 1" screen. Similarly 67 per cent. of the material will pass through a 2" screen. The percentage that is coarser than 1" and finer than 2" is found by subtracting one percentage from the other, which in this case is equal to 36 per cent. The lines to be followed in this problem are indicated heavy for clearance.

In case the material has already been screened through a certain perforation, the diagonal should be selected on the 100 per cent. vertical line instead of 85 per cent. line, because there are no rejections in the mass.



McCully Fine Crusher.

McCully Fine Crushers

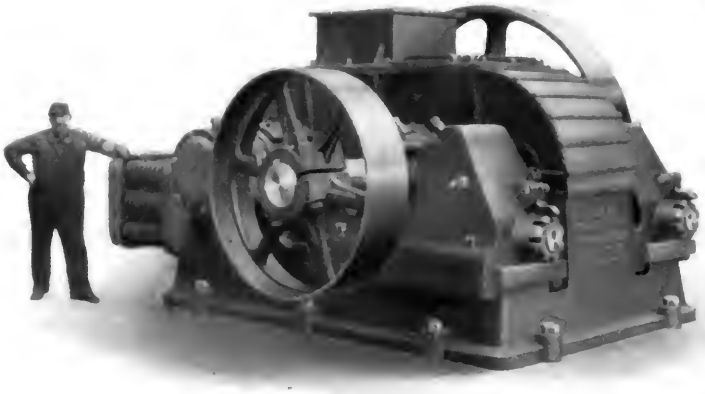
THE increasing demand for finely crushed stone necessitated the production of a machine for this special purpose. Without departing from the accepted standards, we have made a slight modification of our regular McCully Crusher, which has produced results unequalled by any other process for fine crushing. The only changes required are in the head and concaves, which are supplied either in chilled-iron or manganese steel for either the old or new machines, and for any size from Nos. 1 to 6 both inclusive.

The results obtained by the change are: An increased discharge area; a decreased receiving opening more in harmony with the discharge opening; decreased power required per ton of stone crushed; decreased motion at discharge point, which permits of running the head close to concaves; a much finer and more uniform product; low cost of repairs due to the reduction in size of head and concaves and the fact that the wear is more evenly distributed over the surfaces owing to a better balance in receiving and discharge openings.

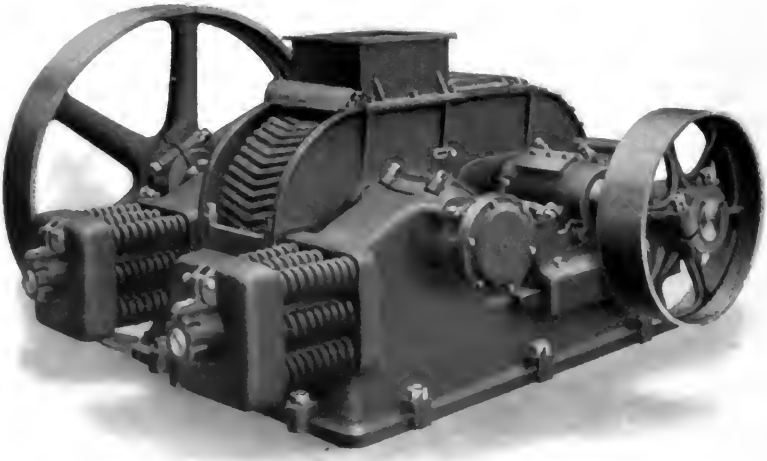
The following table shows the smallest product each machine will make, and the approximate percentages of sizes smaller than maximum, based on ordinary stone:

Size of Crusher	Width of Receiving Openings	Ring Size of Product	Capacities per Hour in Tons of 2000 lbs	Size of Driving Pulley	Revolutions of Driving Pulley	Horsepower Required
1	3½	¼	3 to 4	18 x 6	700	4 to 5
2	4	13/16	5 to 6¼	20 x 8	675	6 to 9
3	4½	15/16	8 to 10	22 x 10	625	10 to 13
4	5	1	11 to 14	28 x 12	575	12 to 17
5	6	1⅛	17 to 21	30 x 14	550	17 to 23
6	8	1 5/16	30 to 37	34 x 16	525	23 to 35
7½	9	1⅝	37 to 46	40 x 18	500	45 to 60
8	11	1¼	62 to 65	44 x 20	475	65 to 85

A still finer product can be obtained with short head crushers with special fittings, but at a sacrifice of capacity. Those desiring a finer product than sizes given in above table should advise capacity desired, size of product, and describe character of stone to be crushed.



54″ x 24″ Superior Crushing Roll.



54″ x 24″ Superior Crushing Roll.

Superior Crushing Rolls

THE illustrations shown herewith are of our Superior Crushing Roll. This type of roll is especially adapted, within certain limits, for crushing the oversize from the preliminary crushers. In fact, it is fast superseding auxiliary crushers for this purpose.

This machine requires less power to produce large quantities of comparatively finely crushed stone than any other type of re-crushing machine. There is also a great advantage in the one unit of enormous capacity, such as our 54 x 24 inch roll has, over a number of smaller machines having more working parts, necessitating larger buildings, complicated driving arrangements, greater attention etc.

Either smooth or corrugated shells are furnished with this roll. When fitted with corrugated shells the rolls are better able to engage or grip large pieces of stone, although the material is not reduced to as fine a product. However, the machine will produce less dust and deliver a more cubical product than when fitted with smooth shells.

We build this roll in sizes from 24 inches diameter and 10 inches face to 54 inches diameter and 24 inches face, with capacities up to 150 tons per hour. It is an exceedingly simple, heavy and strong machine. All parts are readily accessible, and unskilled labor can easily operate it. There is no comparison between this machine and the cheaper and inferior rolls offered by some manufacturers.

We have complete data regarding the advantages and adaptability of this roll, from which we can readily and accurately determine the size of machine and horsepower for any desired requirements.

Our Bulletin No. 28 gives fuller detailed information regarding our Superior Crushing Rolls, and will be sent upon request to any one interested.

Blake Crusher

The above cut illustrates our heavy pattern "Blake" Rock Crusher. All sizes, from 15" x 9" up, are made after this design. These crushers are built of the very best material throughout.

Unless otherwise ordered, the jaw liners will be made of chilled white iron, but we are prepared to furnish any kind of steel that may be required.

Our Crushers have extra large bearings to prevent excessive heating when working on hard rock, and are equipped with safety toggles which will collapse should any iron or steel be fed into the machine, thus precluding any possibility of damage to the frame.

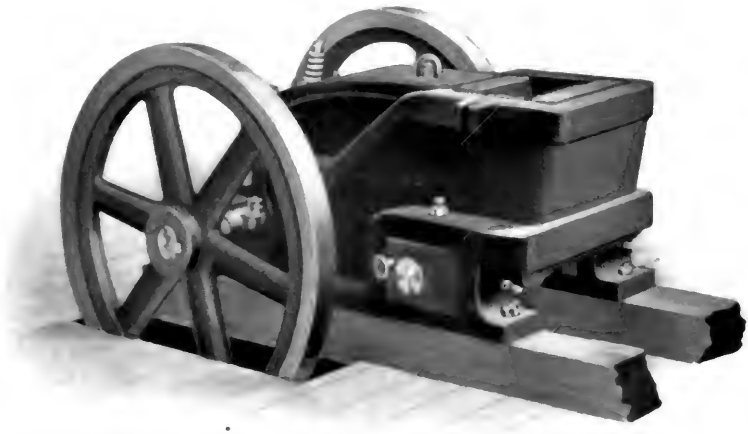
Size	Approximate Capacity in Tons per Day of 10 Hours, to Size Stated						Extreme Dimensions						Size of Pulley	No. of Revolutions	H.P. Required	Total Weight	Weight of Heaviest Piece
	Tons	In	Tons	In	Tons	In.	Length Ft.	Length In.	Width Ft.	Width In.	Height Ft.	Height In.	Inches				
10x 7	50	2	40	1½	25	1	5	11	3	8	4	2	21x 7½	250	7	7,850	3,650
15x 9	100	2½	80	2	55	1½	6	11	5	1	1	10½	30x 8½	250	12	12,000	5,500
20x10	155	3	150	2½	125	2	8	0	5	7½	5	4½	36x13	250	20	21,500	10,000
21x13	210	3	170	2½	150	2	9	3	8	6½	6	6½	42x16½	250	22	36,000	15,000
24x15	250	3	200	2½	175	2	9	3	8	6½	6	6½	42x16½	250	25	38,000	18,000
84x60	1000 to 5000 tons to 10 in						22	0	19	7¼	14	1	2 144x31	100	300 to 450	365,000	51,000

Dodge Crusher

This Crusher has been employed for many years and is used when the product desired is of uniform size and medium fineness. It is best adapted for this purpose by reason of the small movement of the lower part of the jaw. The jaw being hinged or pivoted at the bottom, the greatest movement is at the top. This is directly opposite in principle to the Blake Crusher in which the jaw is hinged at the top and has its greatest movement at the bottom.

The jaw liners are of chilled white iron unless otherwise specified, but we are prepared to furnish liners of any desired material and either smooth or corrugated, as may best meet the requirements of the purchaser.

No.	Size of Jaw Opening (Inches)	Tons per Hour Nut Size	Size of Pulley	Speed	Horse Power	Weight
2	7 x 7	1 to 3	24 x $5\frac{1}{2}$	235	4 to 8	4,300
3	8 x 12	2 to 5	30 x $6\frac{1}{2}$	220	8 to 12	5,600
4	10 x 16	5 to 8	36 x $8\frac{1}{2}$	200	12 to 18	12,000



Belt Conveyor for Handling Crushed Stone in Crushing Plant.

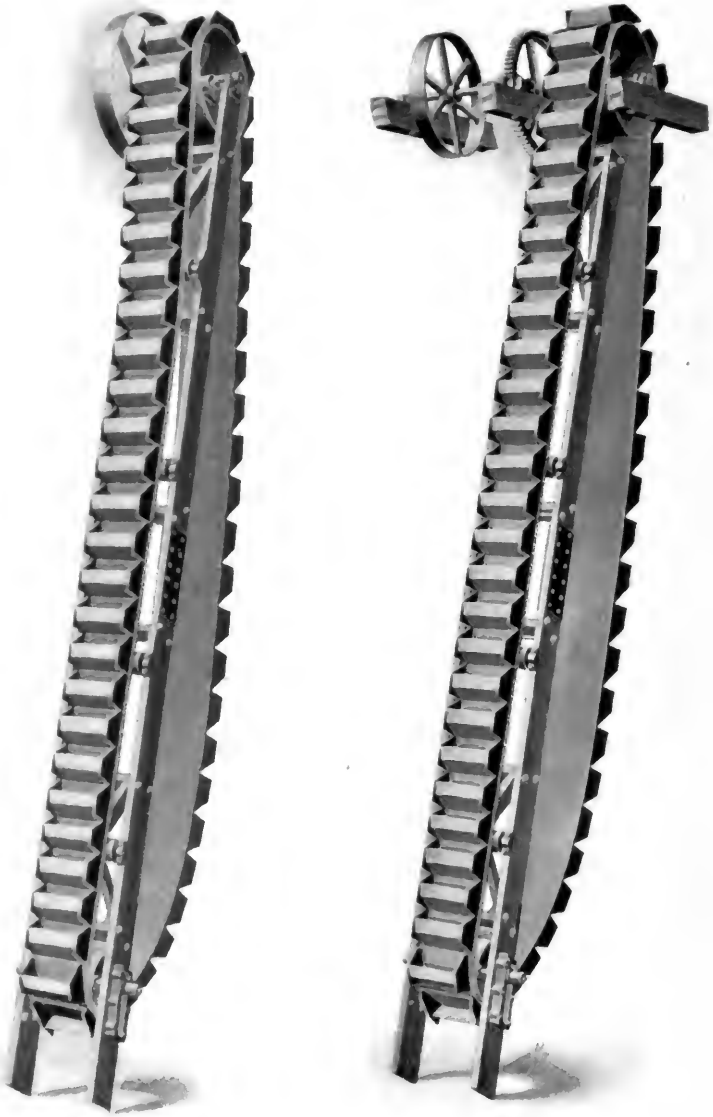
Belt Conveyor for Ground Storage

Belt Conveyors

In order to have a crushing plant as automatic as possible, and to obtain large storage capacities for broken stone, it is necessary to use belt conveyors to distribute the material and convey it to various parts of the plant. The trough belt conveyor as illustrated herewith and on opposite page has for years been the most successful apparatus to accomplish this work. In some instances it is necessary to elevate the material as well as convey it, and this type of conveyor is especially well adapted for this purpose.

Having made a study of the conveying of large quantities of rock, we have developed a special heavy type machine which we can guarantee for the most arduous and continuous service.

We furnish complete iron work, together with the special carrying belts for these conveyors, and supply all necessary drawings for erecting the woodwork, etc.



Single and Geared Head Bucket Elevators.

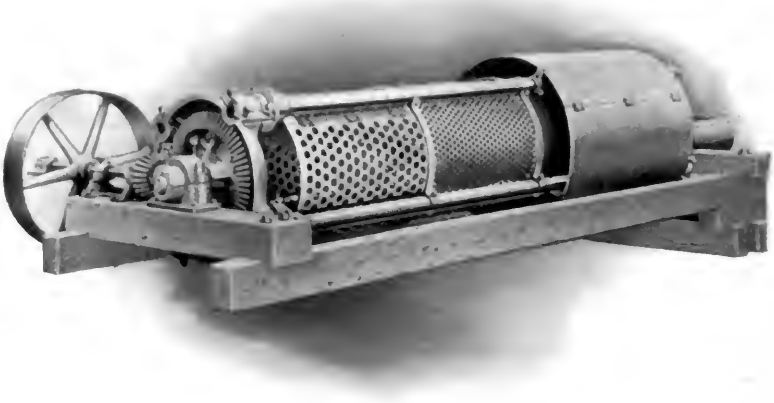
Elevators

IN no part of a crushing plant is first-class design, material and workmanship of greater importance than in the construction of the elevator. Our standard elevators, illustrations of which are shown on opposite page, are designed and built with a view to efficiency, durability and easy running. They are built with wood frames, and in any length up to 100 feet. Unless otherwise specified, where the length required is 30 feet or less, we build them with single head; when over 30 feet, with geared head.

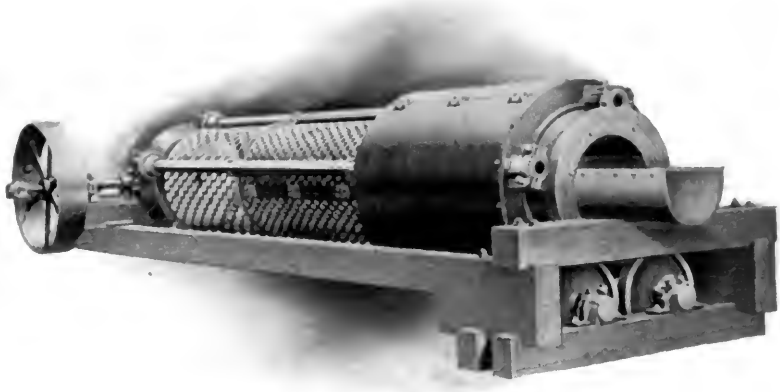
The shafting, head and boot pulleys are of liberal dimensions. The idler rolls are of steel, and all bearings are proportioned for strength and long service. Suitable take-ups are provided at foot of elevator for tightening the belt. The belts used are of the best quality, the thickness varying with the length.

The following table gives the sizes and dimensions of our standard elevators:

Maximum Capacity of Elevator in Tons per hour	Length between Centers of Head and Foot Shaft	Size and Gauge of Buckets	Width of Belt	Total Weight	R P M. Pinion Shaft	R P M. Head Shaft	Suitable for Crusher No.
30	30 ft	9x 9 No. 16	10 in	3400 lbs	171	32	1 and 2
50	30 ft	13x10 No. 14	14 in	1900 lbs	197	32	3 and 4
80	30 ft	15x11 No. 14	16 in	5000 lbs	154	27	5
120	30 ft	18x13 No. 12	20 in	6300 lbs	131	23	6
200	30 ft	24x14 No. 12	26 in	8400 lbs	135	21	7½
325	30 ft	30x15 No. 10	32 in	8500 lbs	123	19	8
450	30 ft	36x18½ No. 7	38 in	9500 lbs	109	19	9
600	30 ft	42x19 3/16 in	44 in	10500 lbs	112	19	10
700	30 ft	48x19 3/16 in	50 in	11500 lbs	112	19	11



Standard Pipe Strut Bar Screen.
(Driving End.)



Standard Pipe Strut Bar Screen.
(Receiving End.)

Screens

THE cuts on the opposite page show our standard type of screen with tabular strut bars for the screen frame. These bars are of extra heavy pipe, and are securely fastened to substantial cast-iron heads at each end. Provision is made for attaching dust jackets of perforated plates or wire cloth outside of the bars, when so desired or ordered.

The receiving end of the screen is carried on chilled-iron rollers with a bearing on each side. A chilled tread or wearing ring is bolted to the head of the screen, and is made removable for renewal purposes.

The end thrust of the screen is carried by a steel button at the driving end, which also eliminates wear on the end of the babbitted bearing.

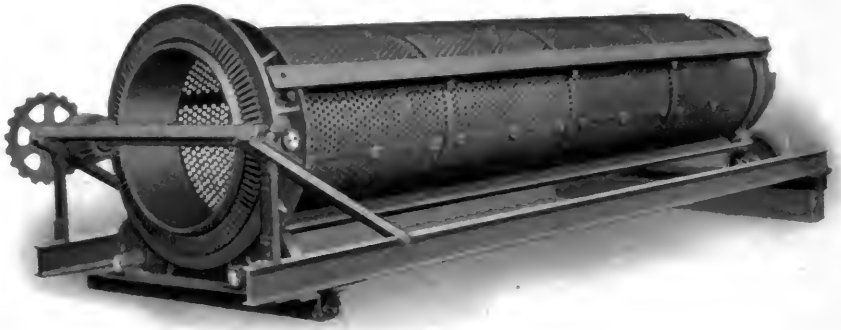
The driving gear is made detachable, and can be replaced separately from the head. The main bearing is of the heaviest type, and self-aligning. Both the receiving end and the discharge head are protected by wearing plates.

Substitution of one screen section for another is readily made by simply taking off one screen bar. The screens are made in sections of any length desired, and with any size of perforation.

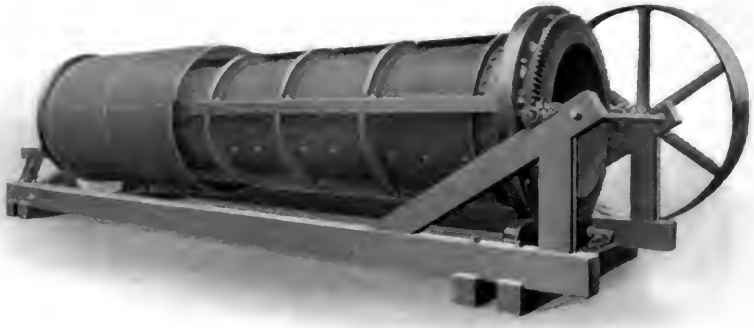
The box or body is made of steel plate, with forged steel trimmings.

Sizes and Weights, Pipe Strut Bar Screens

Diameter in Inches	Length in Feet	R. P. M. Screen	R. P. M. Pinion Shaft
22	8 10 12 14	22	66
40	8 10 12 14 16 18	18	54
48	10 12 14 16 18 20	16	56



Standard Roller Type Bevel Gear Driven Screen with Steel Frame.



Standard Roller Type Bevel Gear Driven Screen with Wood Frame.

Standard Roller Type Screens

THE illustrations shown herewith are representative of our standard roller type, bevel gear driven screen. In both this type and the one previously described there are no obstructions of any kind to wear out or impede the free discharge of the material.

The drums of our roller type screen are provided with outside steel angle bars securely fastened to substantial cast-iron heads. When desired or ordered, a dust jacket of perforated plate or wire cloth may be attached outside the bars. This jacket is supported by cast-iron brackets bolted to the screen bars, and is easily removable, being made in halves.

The screen is carried on chilled-iron rollers with bearings on each side of the roller. These rollers are ground after the shafts are pressed in place, to insure perfect running of the screen drum. They bear against steel tires shrunk on the machined shoulders of the roller heads.

A thrust roller is placed at the driving end of the screen for taking up the end thrust due to the inclination of the screen.

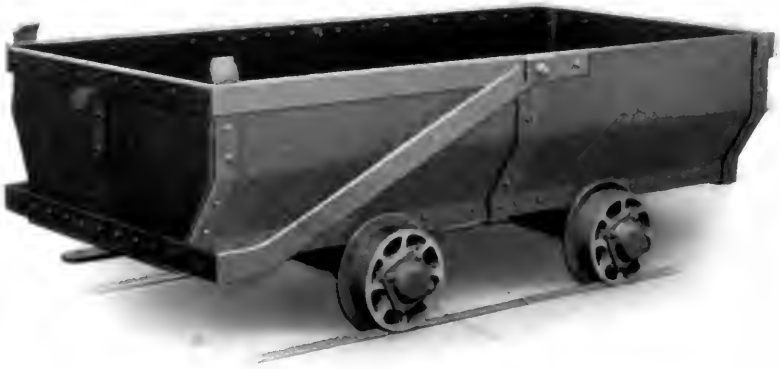
The driving gears and pulleys may be placed at either side of the screen. The driving gear is detachable and is bolted to one of the heads.

The drum angles are reinforced at the joints of the screen sections by tie-bars, which not only help to maintain the sections in place, but also cover the joints and prevent leakage of fine material.

Any of the screen sections may be removed without disturbing the others.

Schedule of Sizes

Diameter in Inches	Length in Feet	R. P. M. Screen	R. P. M. Pinion Shaft
24	6 8 10 12 14 16	23	100
48	8 10 12 14 16 18 20 22 24 26 28	16	80
60	10 12 14 16 18 20 22 24 26 28 30	13	100
72	10 12 14 16 18 20 22 24 26 28 30	12	94
84	12 14 16 18 20 22 24 26 28 30	11	88



Steel Quarry Car with Lifting Gate Closed.

Steel Quarry Car with Lifting Gate Open.

Quarry Cars

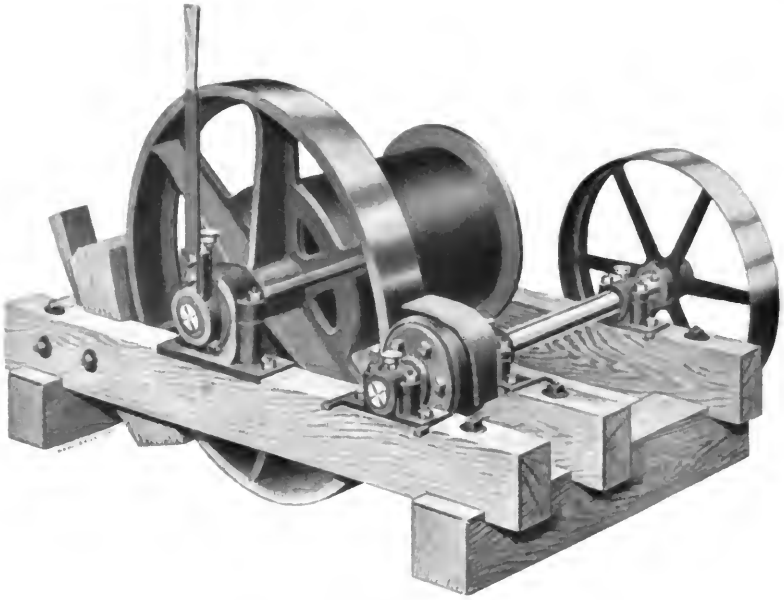
THE accompanying cuts illustrate two of our standard types of quarry cars, which we build in varying sizes and capacities to suit requirements.

The car shown on opposite page is of steel construction, heavily reinforced with straps, and is exceedingly low to facilitate loading by hand. The wheels are self-oiling, and the gate is arranged to so lift that large, flat pieces can be easily dumped without choking. This car dumps automatically into the hopper of the crusher, and for general crusher feeding and quarry purposes there is no more durable car made. We furnish this car for either 30-inch gauge or wider.

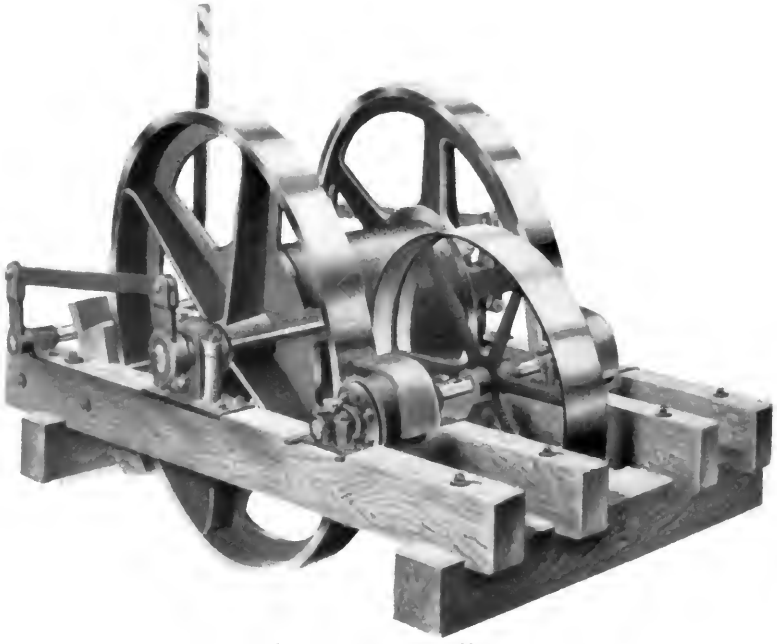
The car shown below is made of steel plate with forged trimmings. The sills are of oak, the ends of which are fitted with protecting plates. The wheels are of chilled iron, 12 to 24 inches in diameter, and made to run tight or loose on axles as ordered. The boxes are lined with babbitt. Gauge of track 20 to 50 inches, as desired.

This car is of very simple and substantial construction, and one of the very best for the purpose intended.

End Dump Quarry Car



Single Friction Drum Hoist.



Double Friction Drum Hoist.

Drum Hoists, Single and Double Friction

OUR Single and Double Friction Drum Hoists, illustrated on opposite page, are the most efficient of their kind for the handling of cars loaded with material, elevating them up the incline from the quarry and discharging their contents into the crushers.

These hoists are exceedingly strong and well made, and are provided with more bearings than in ordinary types.

The following table gives the capacities in which these hoists are built, estimated on an incline of 30° angle:

Table of Capacities, Etc.

Type of Hoist	*Capacity of Hoist Incline 30°	Size of Rope	Winding Capacity of Drum	Pull on Rope	Size of Driving Pulley Inches	Rope Velocity 400 ft per Min R P M of Pulley	Max hp of Hoist	**Weight of Hoist
	1 Yard	$\frac{5}{8}$ in.	246 ft	2240 lbs	32x $8\frac{1}{2}$	285	27	2500 lbs
Single	1 Yard	$\frac{5}{8}$ in	308 ft	2240 lbs	32x $8\frac{1}{2}$	285	27	2600 lbs
Friction	1 Yard	$\frac{5}{8}$ in	370 ft	2240 lbs	32x $8\frac{1}{2}$	285	27	2700 lbs
	$1\frac{1}{2}$ Yard	$\frac{3}{4}$ in	158 ft	3360 lbs	36x$10\frac{1}{2}$	330	$10\frac{1}{4}$	5000 lbs
Double	3 Yard	$\frac{3}{4}$ in	158 ft	6720 lbs	48x$12\frac{1}{2}$	330	$81\frac{1}{2}$	7500 lbs
Friction	4 Yard	$\frac{3}{4}$ in	158 ft	8000 lbs	54x$11\frac{1}{2}$	330	110	8500 lbs

*With inclines less than 30° angle and with rope velocity of less than 400 feet per minute, the power required will be reduced in direct proportion

**Weights are for steel drums—add 10 per cent for cast iron drums

Overhead Travelers

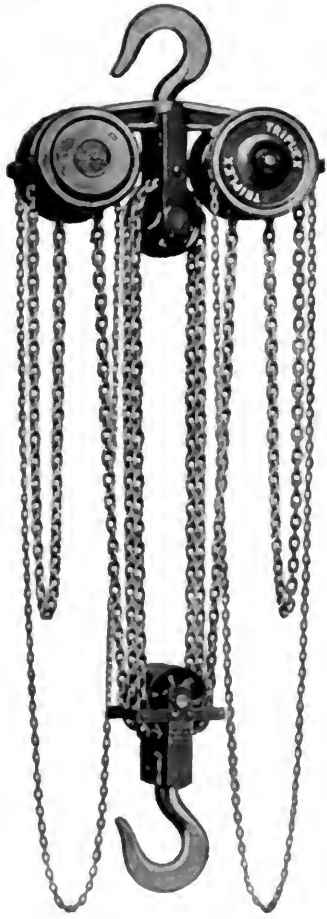
The use of overhead travelers is practically indispensable in a well-equipped crushing plant. Their cost is very small compared with the great saving of time in moving parts when setting up or repairing the crusher. No substitute that may be made embodies an equal degree of safety and efficiency, and the small expenditure necessary for their installation is repaid many times over by the saving in time and annoyance they effect.

The sizes and weights of the pattern above illustrated are as follows:

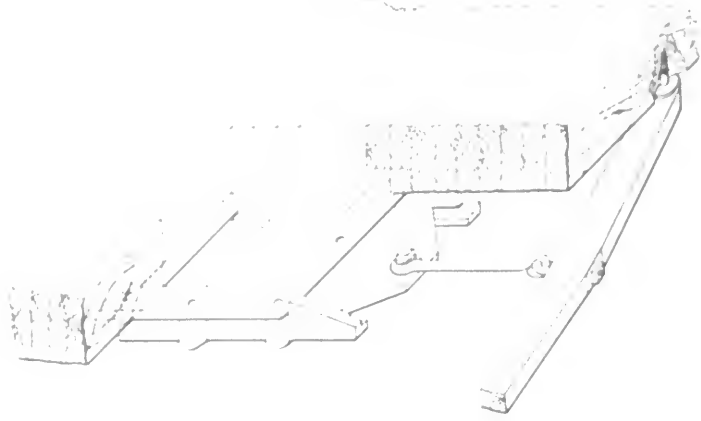
Carrying Capacity	Weight
1 ton	80 pounds
4 tons	180 pounds
6 tons	450 pounds
20 tons	770 pounds

Chain Blocks and Tackles

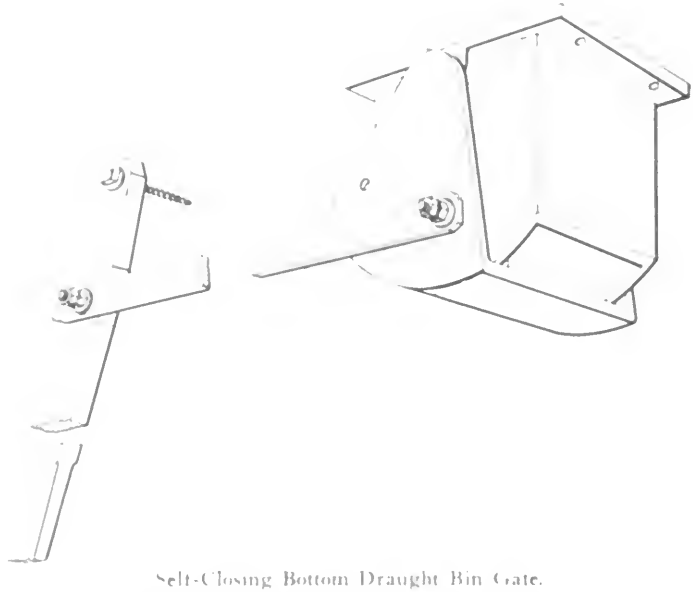
THE chain block and tackle shown herewith is especially well adapted for use in connection with the overhead traveler illustrated on opposite page. The device can handle the heaviest part of a crusher without a foot-pound of wasted hoisting power nor a minute of wasted "waiting time."



Capacity in Tons	Regular Hoist in Feet	Net Weight in Pounds	Chain Pull in Pounds to Lift Full Load
1	8	80	82
1½	8	124	110
3	10	200	114
4	10	290	124
5	12	380	110
8	12	570	135
12	12	800	130
16	12	1000	135
20	12	1375	140



Standard Bottom Draught Bin Gate.



Self-Closing Bottom Draught Bin Gate.

Above are illustrations of two standard types of Bottom Draught Bin Gates, for which we furnish all iron and steel work. We build these gates in sizes to meet any requirement. We are also prepared to build gates of special design to order.

Engineering

ONE of the most important features entering into the erection and successful operation of a crushing plant is in securing the services of competent and experienced engineers. The mere buying of high grade machinery does not alone insure the perfect operation of a plant. That is but one of the very necessary essentials: the plant must first be properly designed if it is to meet the fullest expectations of the operators.

Our Engineering Department is in charge of an expert engineer, with a corps of experienced assistants, thoroughly familiar with the most modern practice for breaking and handling large quantities of rock and ore. Their knowledge and experience are at all times at the service of prospective buyers of crushing plants. We furnish complete working drawings for the erection of crushing plants to meet every requirement, and of any desired capacity, together with separate foundation plans, including timber estimate, bolt list and masonry specifications. With this information any competent millwright will be able to erect a modern plant without further assistance from us. However, we will furnish our own competent millwrights to take charge of the construction work and installing the machinery, when so desired.

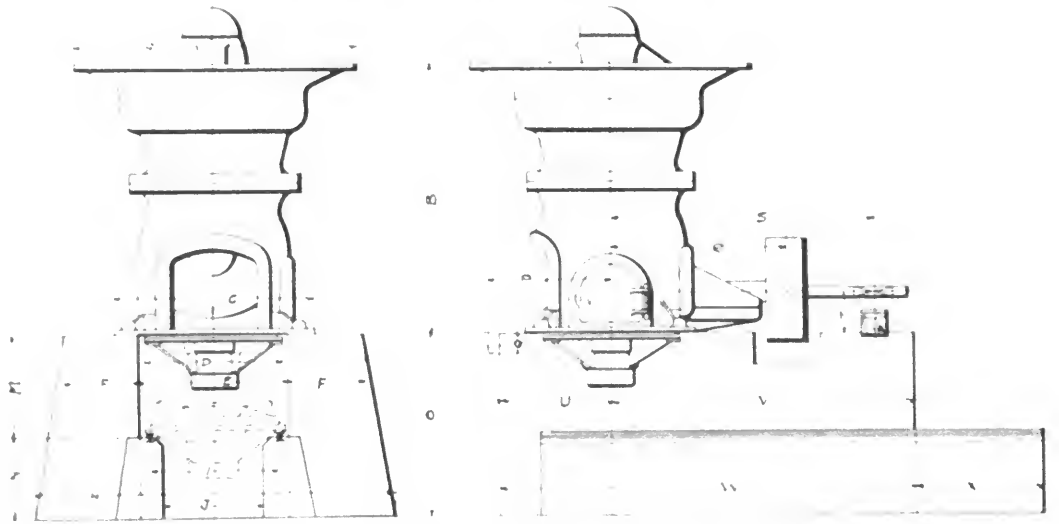
The Power and Mining Machinery Company has had long and valuable experience in the designing and equipping of many of the most notably successful plants in this and foreign countries. The constantly increasing demand for crushed stone for innumerable commercial purposes has necessitated the building of larger crushing plants, until today many of these plants have capacities far in excess of anything dreamed of a few years ago.

The Power and Mining Machinery Company are pioneers in the building of these large plants, and were the first to build gyratory crushers in sizes larger than what is commonly known as the No. 9 machine. The present Mammoth McCully Crusher has been so eminently successful, and has aroused such universal interest that other builders have been prompted to attempt the building of larger crushers also. However, the fact that the most successful of these extremely large plants are equipped with our machinery is ample evidence of the confidence the trade has in our reputation as leaders in this particular line of engineering.

We shall at all times be pleased to correspond with persons contemplating the erection of crushing plants of any desired capacity, or for special arrangements to suit unusual conditions, and can give full assurance that any plant designed by us will embody only such engineering practice as past experience has proven the most satisfactory and economical.

McCully Crusher Standard Discharge Straight Drive

General Dimensions Concrete Foundation.



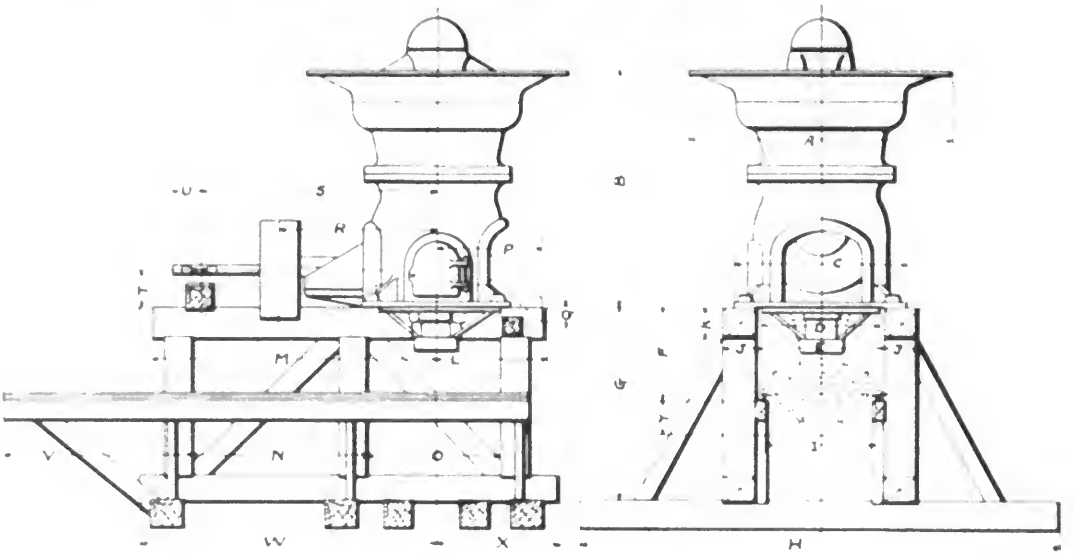
No	A	B	C	D	E	F	H	I	J	M	N	O	P	Q	R	S	T	U	V	W	X	Pulley Dia.	Pulley Face	R P.M
	ft.in.	ft in.	ft.in.	ft.in.	ft.in.	ft.in.	ft.in.	ft.in.	ft.in.	ft.in.	ft.in.	ft.in.	ft.in.	In.	ft.in.	ft.in.	In.	ft.in.	ft in	ft.in.	ft.in.	In.	In.	
1	4- 6	4- 4½	3- 4	2- 2	2- 4	0-18	6- 0	0-21	0-17	0-20	2- 2	3-10	0-21½	6	2- 7½	4- 4	7½	2- 0	5- 0	7- 0	2- 0	18	6½	600
2	4- 8	4-10	3-10	2- 6½	2- 8½	0-20	7- 2	2- 3	0-22	2- 2	2- 4	4- 6	2- 3	6½	2-11½	4- 8	9½	2- 2½	5- 5	7- 7½	2- 6½	20	8½	575
3	5- 6	5- 6½	4- 6	2-10	3- 0	0-22	8- 0	2- 6	2- 0	2- 5	2- 3	4- 8	2- 6	4½	3- 7	5- 7	11	2- 3	6- 5	8- 8	2-10	22	10½	525
4	6- 8	6- 3½	5- 0	3- 4	3- 6	2- 0	8-10	3- 0	2- 6	2- 8	2- 2	4-10	3- 0	7	4- 3¼	6- 5	12½	2- 9	7- 5	10- 2	3- 2	28	12½	475
5	7-10	7- 4½	5-10	3-10	4- 0	2- 1	9- 8	3- 5	2- 8	2- 9	2- 3	5- 0	3- 6½	10	4-10¼	7- 4	13½	3- 1	8- 4	11- 5	3- 8	30	14½	450
6	8-10	8- 2¾	6- 3	4- 1	4- 3	2- 3	10- 4	3- 8	3- 2	2-11	2- 4	5- 3	3-10	10	5- 3	7-11½	15	3- 3	9- 1½	12- 4½	4- 1	34	16½	425
7½	10- 8	9- 5	7- 2	4-10	5- 0	2- 6	12- 0	4- 4	3- 8	3- 4	2- 8	6- 0	4- 2	9	5- 8½	8- 9	16½	4- 0	10- 0	14- 0	4- 6	40	18½	400
8	11- 6	11- 1	8- 4	5- 9	5-11	2- 9	14- 0	5- 3	4- 5	3-10	2- 4	6- 2	5- 0	12	6- 6	9- 9	19	4- 6½	10-11½	15- 6	5-10	44	20½	375
9	14- 0	12- 8½	9- 0	6- 3	6- 6	3- 0	15- 6	5- 6	4- 8	4- 6	2- 6	7- 0	5- 2	5½	6-11½	10- 5½	19½	5- 2	11-10	17- 0	6- 6	52	20½	350

NOTE—Above dimensions are for preliminary guide only. Get detail drawing for erecting machine.

POWER & MINING MACHINERY CO.

McCully Crusher Standard Discharge

General Dimensions Timber Foundations.

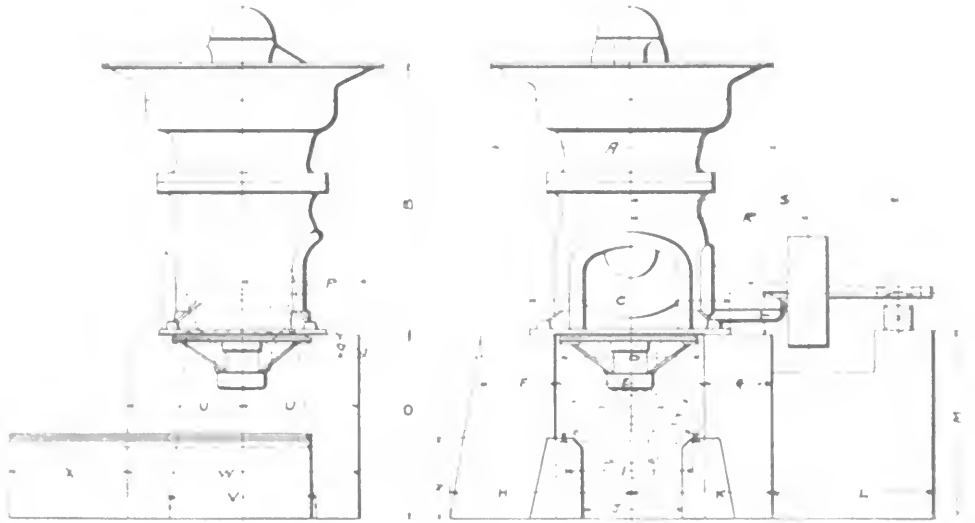


No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Pulley Dia	Pulley Face	R	P	M
	ft.in.	ft.	ft.	ft.	ft.in.	ft.	ft.in.	ft.in.	ft.	in.	in.	ft.in.	ft.in.	ft.in.	ft.in.	ft.in.	in.	ft.in.	ft.in.	in.	in.	ft.in.	ft.in.	ft.in.	in.	in.	in.			
1																														
2																														
3																														
4																														
5																														
6																														

Note: These dimensions are for preliminary guide only. Get detail drawing for erecting machine.

MuCully Crusher Side Discharge

General Dimensions Concrete Foundations.



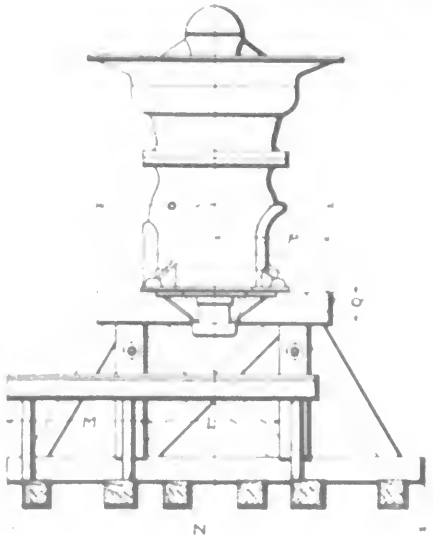
No	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Pulley Dia	Pulley Face	R P M
	ft.in.	ft.in.	ft in	ft in	ft in	ft in	ft in.	ft.in.	ft.in.	ft.in.	ft.in.	ft in	ft.in.	ft.in.	ft.in.	ft.in.	in.	ft.in.	ft. in.	in	ft in	ft.in.	ft.in	ft.in	In.	In	
1	4- 6	4- 4½	3- 4	2- 2	2- 4	0- 18	0-12	3	0-23	0-17	2- 2	2-10	4- 0	2- 7	0-10	0-2½	6	2- 7½	4- 4	7½	2- 0	3- 5	4-0	2-0	18	6½	600
2	4- 8	4-10	3-10	2- 6½	2 8½	0- 20	0-13	3- 7	2- 3	0-22	2- 5½	2-11½	4- 6	2- 4	4- 0	2- 3	6½	2-11½	4 8	9½	2- 2½	3-10	4- 5	2- 6½	20	8½	575
3	5- 6	5- 6½	4- 6	2-10	3- 0	0- 22	0-17	4- 0	2- 6	2- 0	2-11	3- 6	4- 8	2- 3	4- 8	2- 6	4½	3- 7	5- 7	11	2- 3	4 2	4 6	3-10	22	10½	525
4	6- 8	6- 3½	5- 0	3- 4	3- 6	0- 24	0-19	4- 5	3- 0	2- 6	3- 4	3-11	4-10½	2- 2	4-10	3- 0	7	4- 3½	6- 5	12½	2- 9	4 8	5- 6	3- 2	28	12½	475
5	7-10	7- 4½	5-10	3-10	4- 0	2- 1	0-22	4-10	3- 5	2- 8	3-10	4- 4	5- 1½	2- 3	5- 0	3- 6½	10	4-10½	7- 4	13½	3- 1	5- 0	6- 2	3- 4	30	14½	440
6	8-10	8- 2½	6- 3	4- 1	4- 3	2- 3	2- 0	5- 2	3- 8	3- 2	4 1½	4-10	5- 3	2- 4	5- 3	3-10	10	5- 3	7-11½	15	3- 3	5- 4	6- 6	4- 0	34	16½	425
7½	10- 8	9- 5	7- 2	4-10	5- 0	2- 6	2- 0	6- 0	4- 4	3- 8	4 6	5- 3	6- 1½	2- 8	6- 0	4- 2	9	5- 8½	8- 9	16½	4- 0	5- 6	8- 0	4- 0	40	18½	400
8	11- 6	11- 1	8- 4	5- 9	5-11	2- 9	2- 0	7- 0	5- 3	4- 5	4-11½	5- 9½	6- 5½	2- 4	6- 2	5- 0	12	6- 6	9- 9	19	4- 6½	6- 0	9- 1	5- 1	44	20½	375
9	14- 0	12- 8½	9- 0	6- 3	6- 6	3- 0	2- 5½	7- 9	5- 6	4- 8	5- 8½	6- 2	7- 4	2- 6	7- 0	5- 2	5½	6-11½	10- 5½	19½	5- 2	7- 2	10- 4	5- 6	52	20½	350
10	14- 0	13- 1½	9- 0	6- 3	6- 6	3- 0	2- 5½	7- 9	5- 6	4- 8	5- 8½	6- 2	7- 4	2- 6	7- 0	5- 2	5½	6-11½	10- 5½	19½	5- 2	7- 2	10- 4	5- 6	52	24½	350

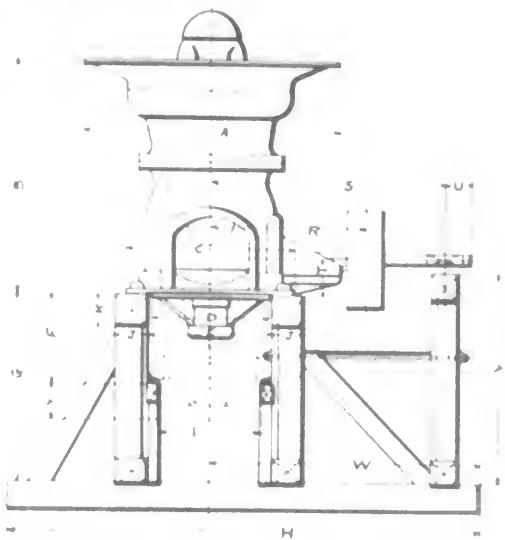
NOTE Above dimensions are for preliminary guide only. Get detail drawing for erecting machine

POWER & MINING MACHINERY CO.

McCully Crusher — Side Discharge

General Dimensio ns — Timber Foundations.



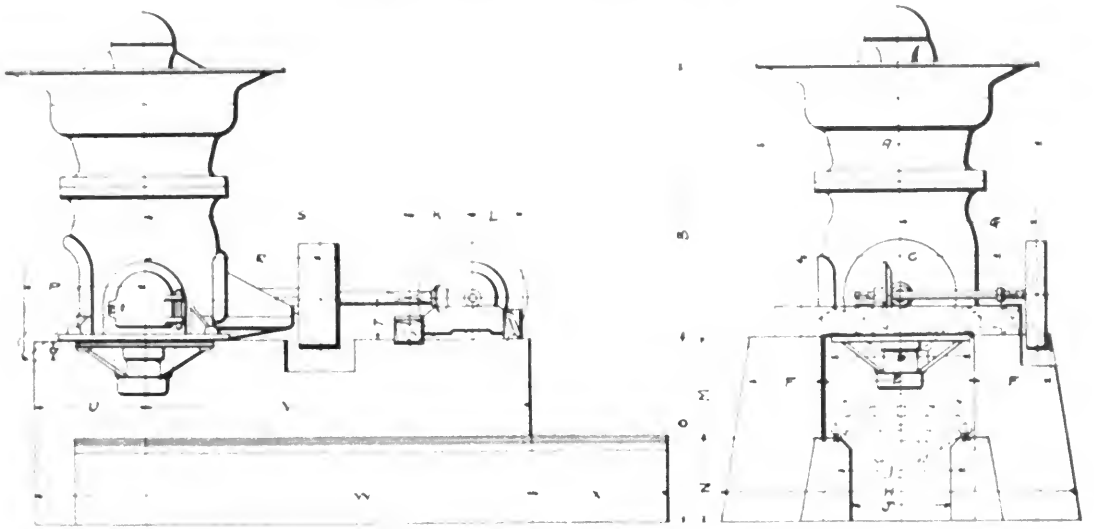


No	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	Y	Pulley Dia	Pulley Face	R P M
	ft in	ft in	ft in	ft in	ft in	ft in	ft in	ft in	ft in	in	in	ft in	ft in	ft in	ft in	ft in	in	in	ft in	ft in	in	in	ft in	ft in	in	in	in	
1	4	4	4	2	2	4	6	2	4	6	15	0	2	8	8	2	2	6	8	10	0	4	3	0	2	6	2	4	4	2	6	5	0	5	0	9	18	6	600
2	4	8	4	2	2	4	6	2	5	6	15	0	2	8	8	2	2	8	8	10	0	4	6	0	2	6	2	4	8	2	6	5	6	5	6	10	20	7	600
3	4	8	4	2	2	4	6	2	5	6	15	0	2	8	8	2	2	8	8	10	0	4	6	0	2	6	2	4	8	2	6	5	6	5	6	10	20	7	600
4	5	0	4	2	2	4	6	2	5	6	15	0	2	8	8	2	2	10	8	10	0	4	9	0	2	6	2	4	8	2	6	5	6	5	6	11	22	7	600
5	5	0	4	2	2	4	6	2	5	6	15	0	2	8	8	2	2	10	8	10	0	4	9	0	2	6	2	4	8	2	6	5	6	5	6	11	22	7	600
6	5	4	4	2	2	4	6	2	5	6	15	0	2	8	8	2	2	10	8	10	0	4	9	0	2	6	2	4	8	2	6	5	6	5	6	11	22	7	600
7	5	8	4	2	2	4	6	2	5	6	15	0	2	8	8	2	2	10	8	10	0	4	9	0	2	6	2	4	8	2	6	5	6	5	6	11	22	7	600
8	6	0	4	2	2	4	6	2	5	6	15	0	2	8	8	2	2	10	8	10	0	4	9	0	2	6	2	4	8	2	6	5	6	5	6	11	22	7	600

Notes. Above dimensions are for preliminary guide only. Get detail drawing for erecting machine.

MuCully Crusher Standard Discharge Back Gear Drive

General Dimensions Concrete Foundation.



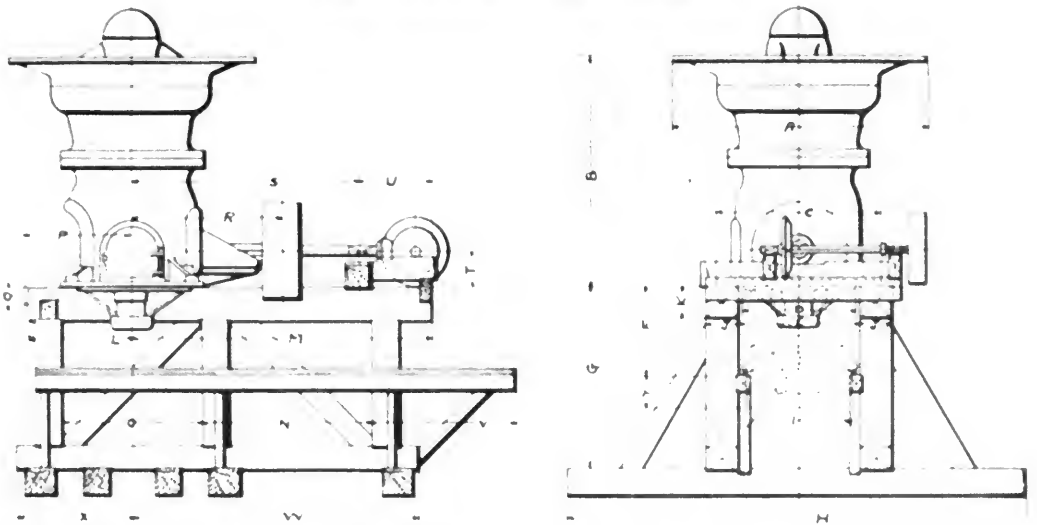
No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Pulley Dia.	Pulley Face	Pulley R.P.M	Back Gear Shaft R.P.M
	ft.in.	ft. in.	ft.in.	ft.in.	ft.in.	ft.in.	ft.in.	ft.in.	ft in.	ft.in.	ft.in.	in.	ft.in.	ft.in.	ft.in.	ft.in.	in.	ft.in.	ft.in.	in.	ft in.	ft.in.	ft in	ft.in.	in.	in		
1	4- 6	4- 4¾	3- 4	2- 2	2- 4	0- 18	2- 9½	0- 0	0- 23	0- 17	0-15¼	14⅜	1- 20	2- 2	3- 10	0-24¼	6	2- 7¼	4- 4	7½	2- 0	7- 1	9- 1	2- 0	18	6½	600	240
2	4- 8	4-10	3-10	2- 6½	2- 8½	0- 20	2- 9½	7- 2	2- 3	0- 22	0-17¼	14⅜	2- 2	2- 4	4- 6	2- 3	6½	2-11⅜	4- 8	9½	2- 2½	7- 7	9- 9½	2- 6	20	8½	575	230
3	5- 6	5- 6⅜	4- 6	2-10	3- 0	0- 22½	2-11⅜	8- 0	2- 6	2- 0	0-18⅛	14½	2- 5	2- 3	4- 8	2- 6	4½	3- 7	5- 7	11	2- 3	8- 7	10-11½	2- 10	22	10½	525	210
4	6- 8	6- 3⅜	5- 0	3- 4	3- 6	2- 0	3- 5	9-10	3- 0	2- 6	0-20½	16⅜	2- 8	2- 2	4- 10	3- 0	7	4- 3¼	6- 5	12½	2- 9	9- 9	12- 6	3- 2	28	12⅞	475	190
5	7-10	7- 4⅜	5-10	3-10	4- 0	2- 1	3- 8½	9- 8	3- 5	2- 8	0-20⅞	16⅜	2- 9	2- 3	5- 0	3- 6⅜	10	4-10¼	7- 4	13⅜	3- 1	10- 8	13- 9	3- 8	30	14⅜	450	180
6	8-10	8- 2⅛	6- 3	4- 1	4- 3	2- 3	4- 0⅝	10- 4	3- 8	3- 2	0-23	16	2- 11	2- 4	5- 3	3-10	10	5- 3	7-11½	15	3- 3	11- 5½	14- 8½	4- 0	34	16½	425	170
7½	10- 8	9- 5	7- 2	4-10	5- 0	2- 6	4- 8	12- 0	4- 4	3- 8	0-23½	15½	3- 4	2- 8	6- 0	4- 2	9	5- 8½	8- 9	16⅜	4- 0	12- 3	16- 3	4- 6	40	18½	400	160
8	11- 6	11- 1	8- 4	5- 9	5-11	2- 9	5- 7	14- 0	5- 3	4- 5	0-24	16	3- 10	2- 4	6- 2	5- 0	12	6- 6	9- 9	19	4- 6½	13- 5	17-11½	5- 10	44	20½	375	150
9	14- 0	12- 8½	9- 0	6- 3	6- 6	3- 0	6- 1	15- 6	5- 6	4- 8	2- 5½	18½	4- 6	2- 6	7- 0	5- 2	5½	6-11½	10- 5½	19½	5- 2	14-10	20- 0	6- 3	52	20½	350	140

NOTE—Above dimensions are for preliminary guide only. Get detail drawing for erecting machine

POWER & MINING MACHINERY CO.

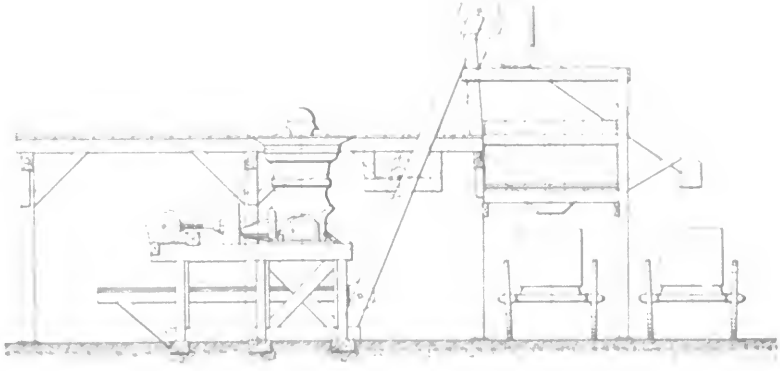
McCully Crusher Standard Discharge Back Gear Drive

General Dimensions Timber Foundations.

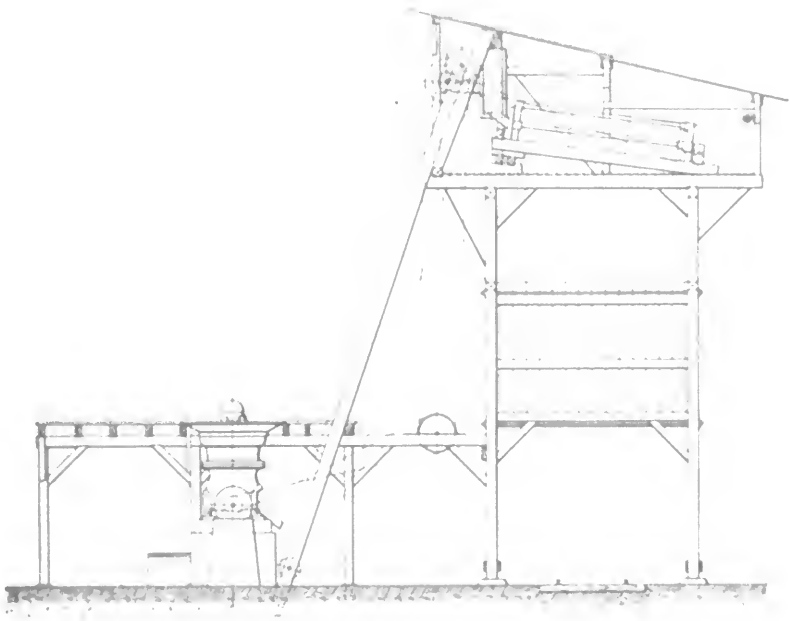


No	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Pulley Dia.	Pulley Face	Back gear Shaft R P M	Back gear Shaft R P M
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	In.	In.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	In.	ft. in.	ft. in.	In.	ft. in.	ft. in.	ft. in.	ft. in.	In.	In.	In.			
1	4	4	4	4	4	6	6	6	8	8	2	6	6	2	2	3	6	2	4	4	7	4	4	4	8	18	10	60	90
2	4	4	4	10	4	6	6	6	8	12	10	6	6	2	2	3	6	2	4	4	7	4	4	4	8	20	10	60	90
3	4	4	5	4	5	6	6	6	8	12	10	6	8	2	10	4	6	2	5	4	7	5	4	4	8	22	11	60	90
4	4	4	5	4	5	6	6	6	8	12	12	6	8	2	10	4	6	2	5	4	7	5	4	4	8	22	11	60	90
5	4	4	5	4	5	6	6	6	8	12	12	6	8	2	10	4	6	2	5	4	7	5	4	4	8	22	11	60	90
6	4	4	5	4	5	6	6	6	8	12	12	6	8	2	10	4	6	2	5	4	7	5	4	4	8	22	11	60	90
7½	4	4	5	4	5	6	6	6	8	12	12	6	8	2	10	4	6	2	5	4	7	5	4	4	8	22	11	60	90

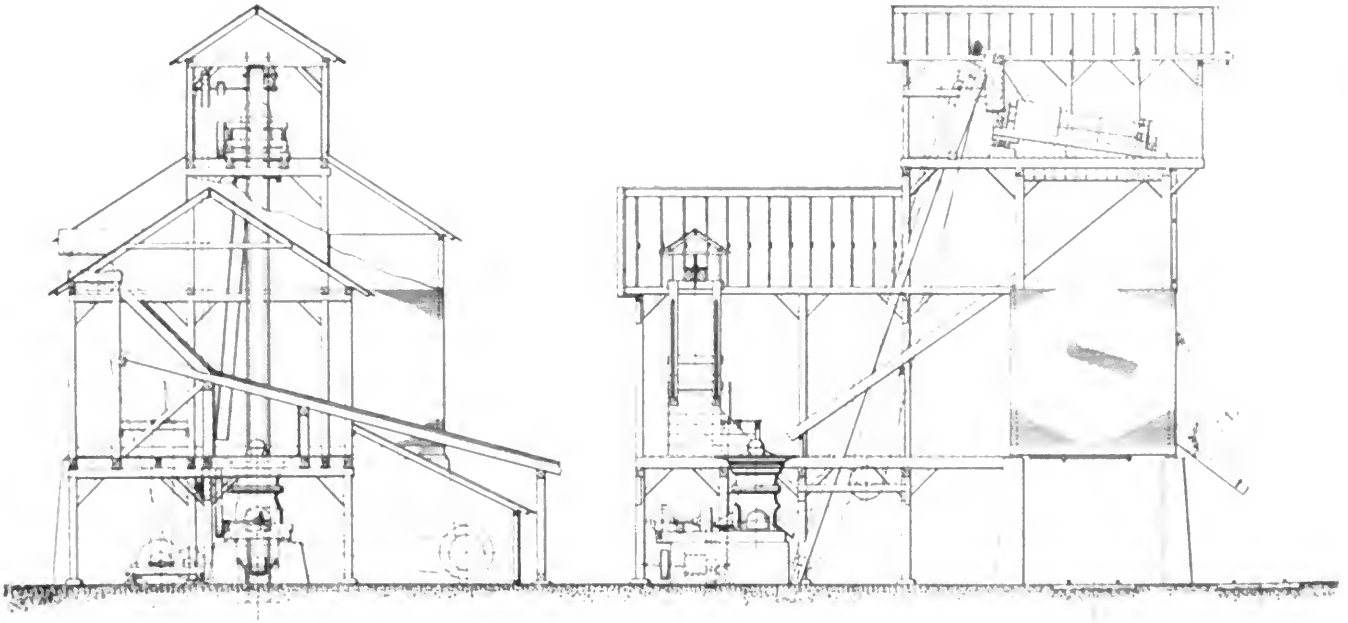
Note Above dimensions are for preliminary guide only Get detail drawing for erecting machine



No. 4½ crusher plant with skip elevator and shoot screen. Elevator driven off from crusher back gear. Small pocket for screenings arranged to spout into wagon.



Medium size McCully crusher plant with elevator and screen. Side discharge crusher. Power for elevator and screen taken from crusher and countershaft. Four-pocket framed bin over railroad tracks



Medium size McCully crusher plant with long elevator for returning rejections from screens and with friction hoist for cars. Elevator and screen driven from crusher back gear. Four-pocket cribbed stone bin supported on concrete walls.

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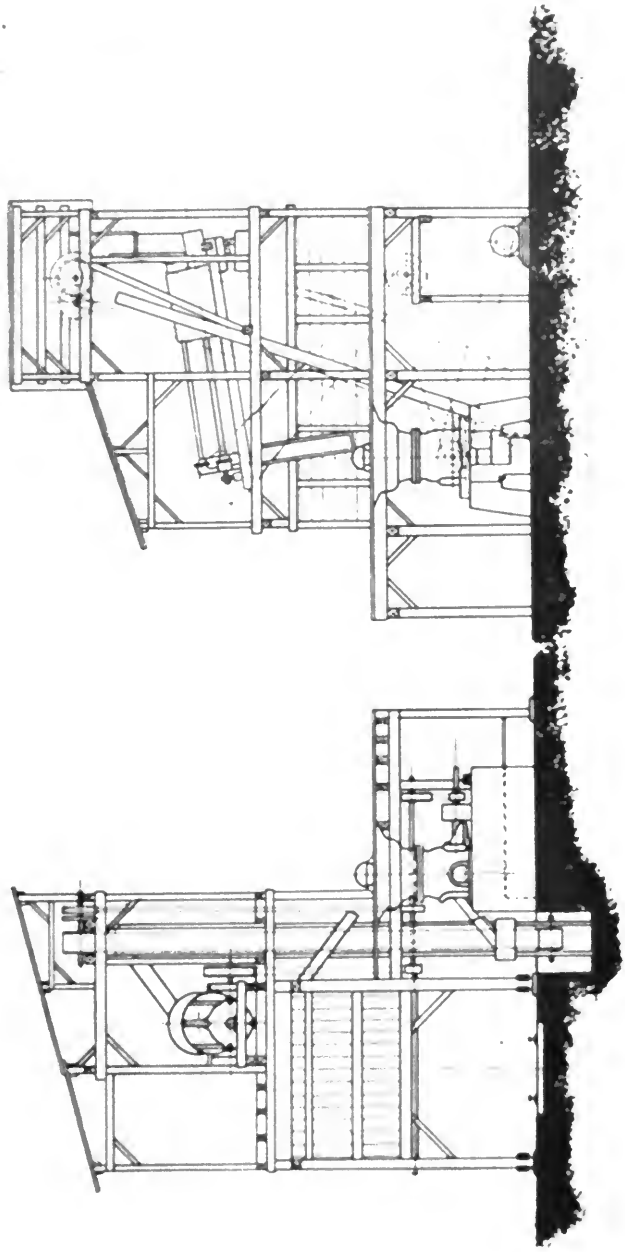
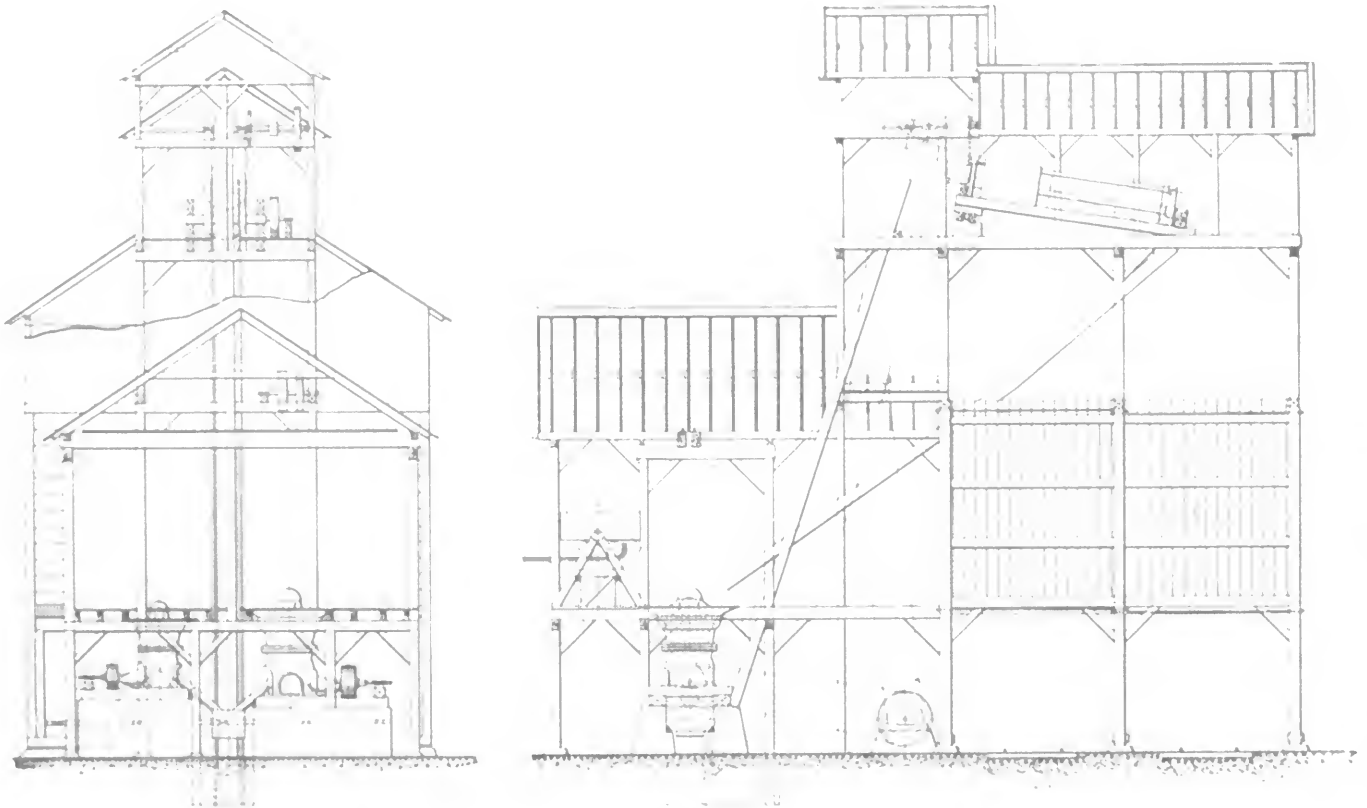
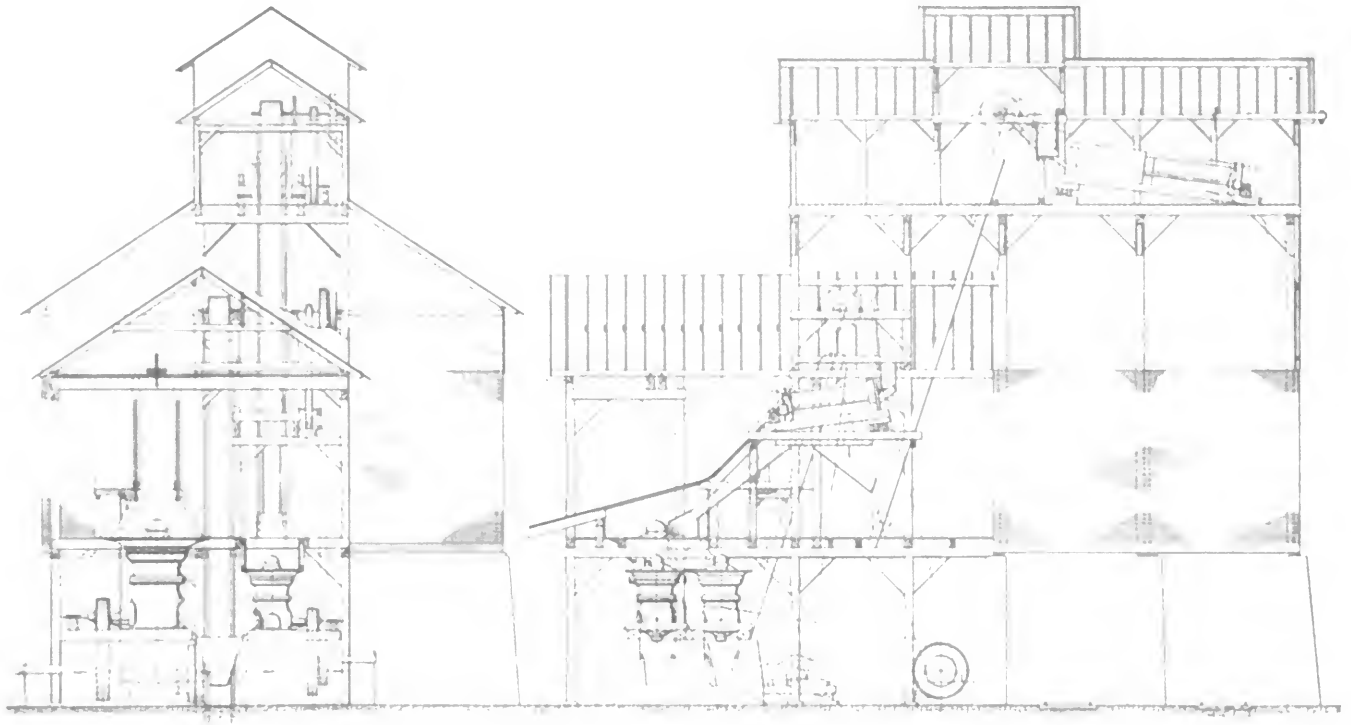


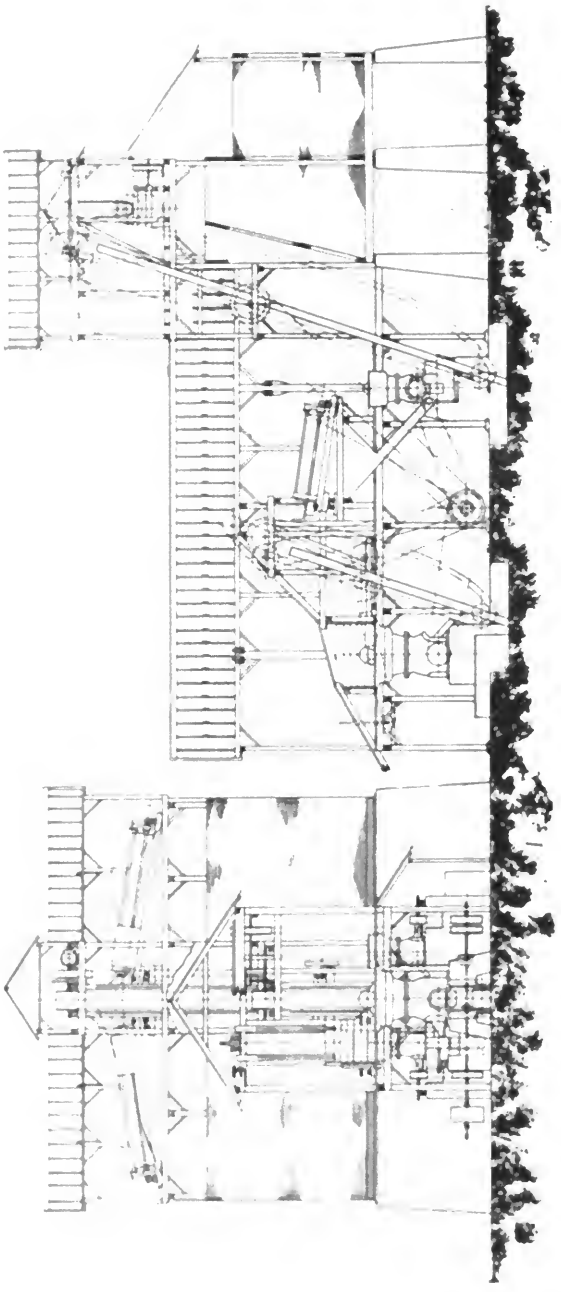
Small or medium size crushing plant on level ground in narrow space. Direct driven.



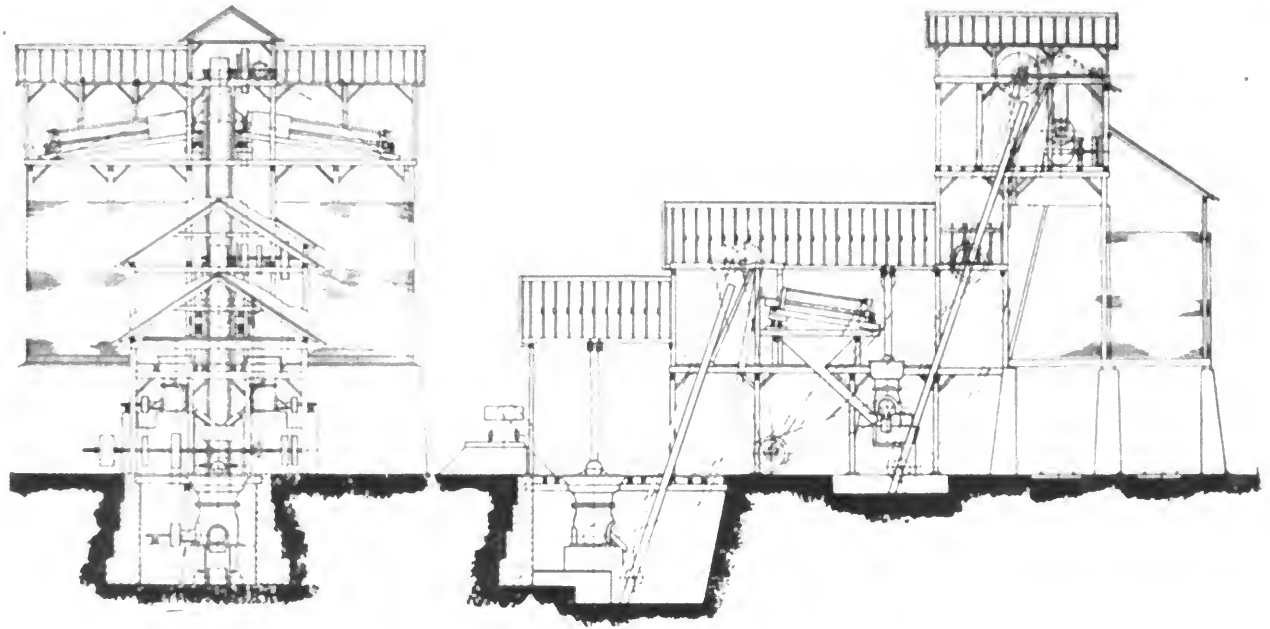
Large McCully crusher plant with long elevator for returning rejections from sizing screen.
Double framed bins over railroad tracks.



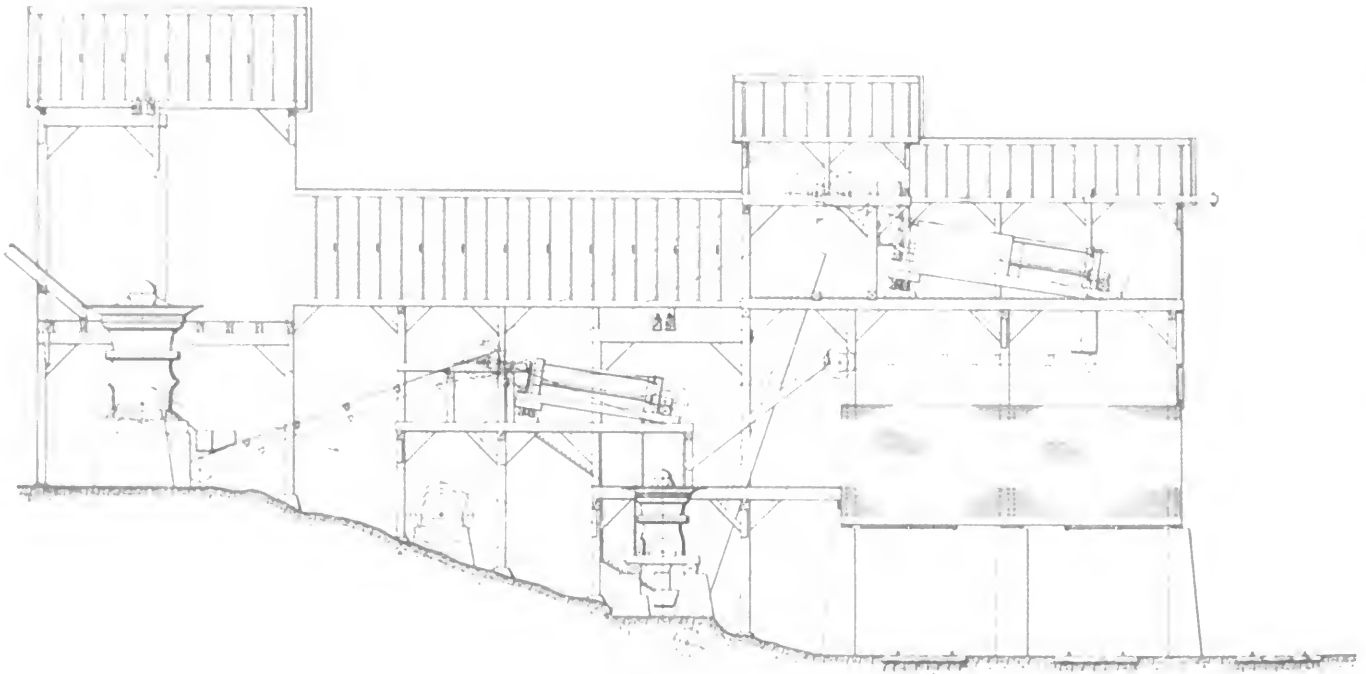
Large McCully crusher plant with 1 or 2 fine crushers. Elevator for feeding coarse and sizing screens. Double cribbed bins supported on concrete walls. Friction hoist for quarry cars.



Medium size or large multiple crushing plant with two elevators. One rejection and two sizing screens. One or two inclines. Two or four small crushers.



Medium size or large multiple crushing plant with two elevators, one rejection and two sizing screens. Large crusher in pit. Two or four small crushers.



Large McCully crusher plant with 1 or 2 fine crushers. Through belt conveyor for feeding coarse screen and elevator for sizing screen. Belt conveyor for returning rejections to fine crushers. Double cribbed bins supported on concrete walls.

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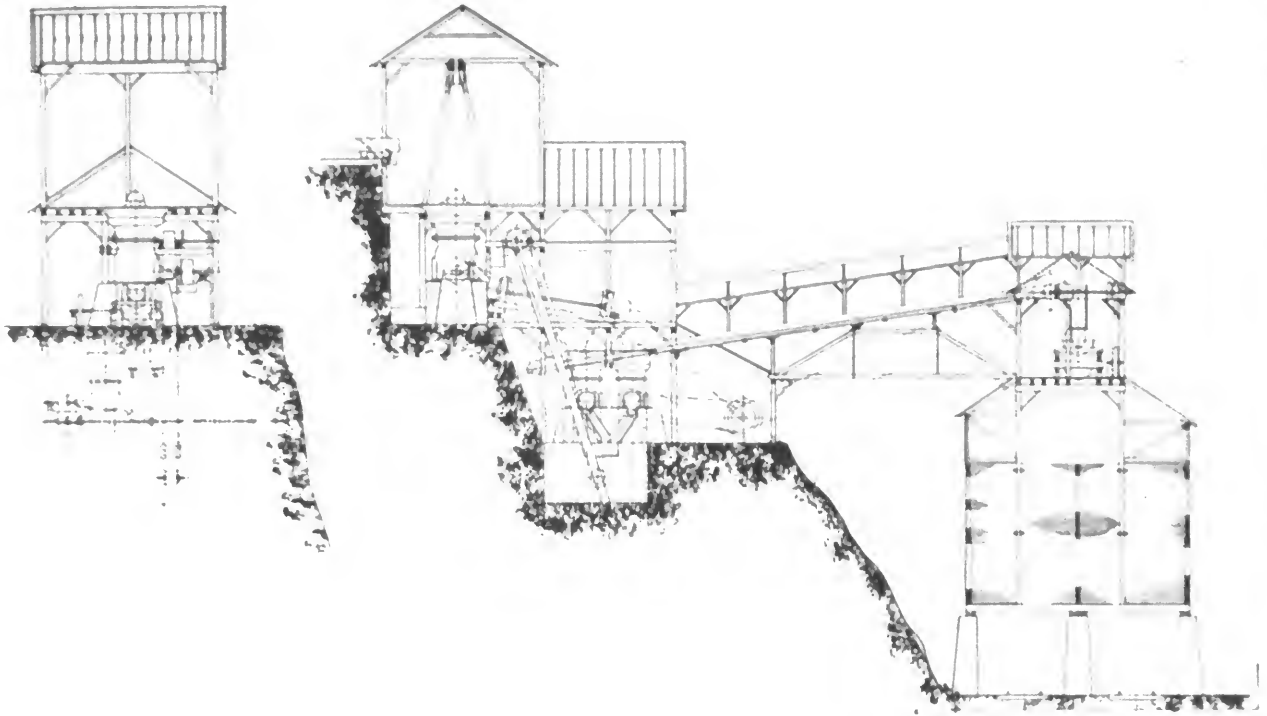
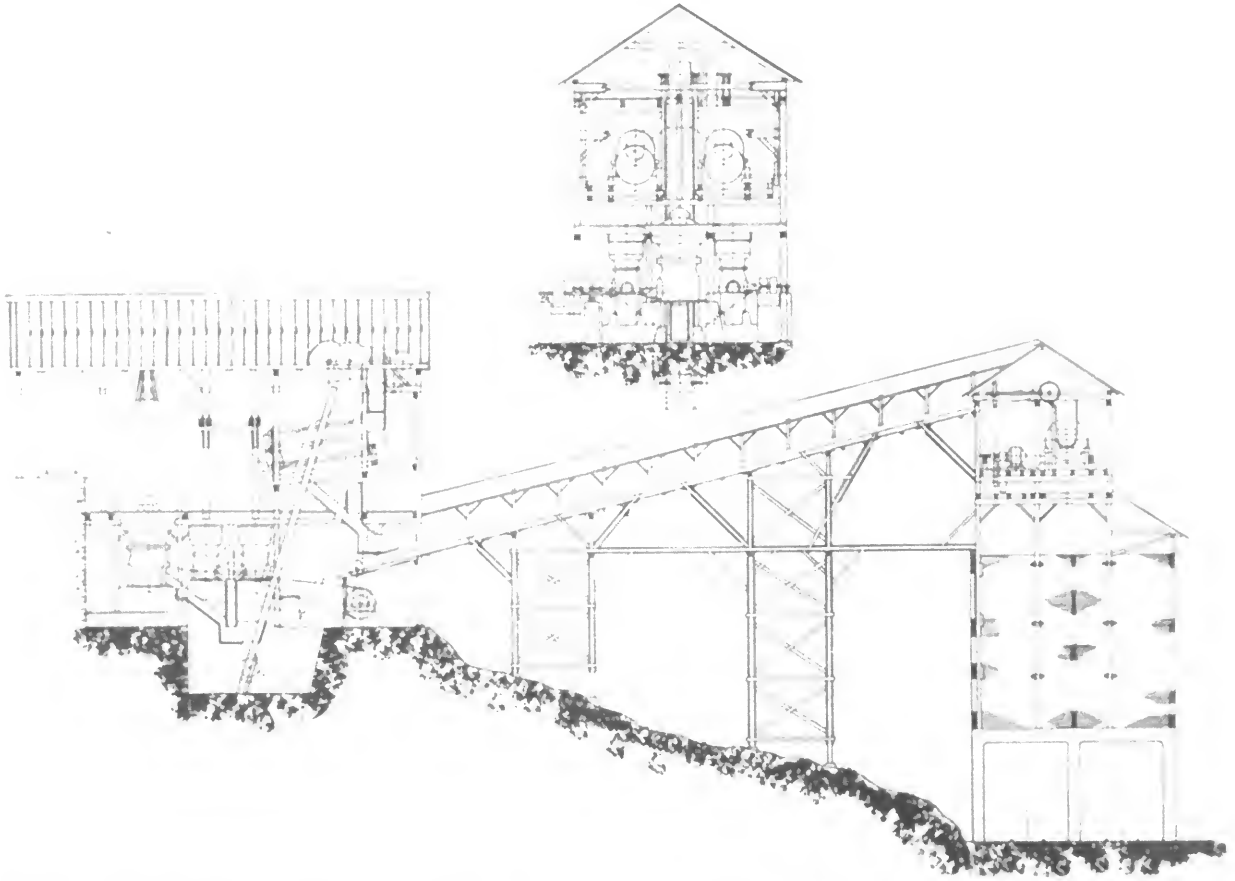
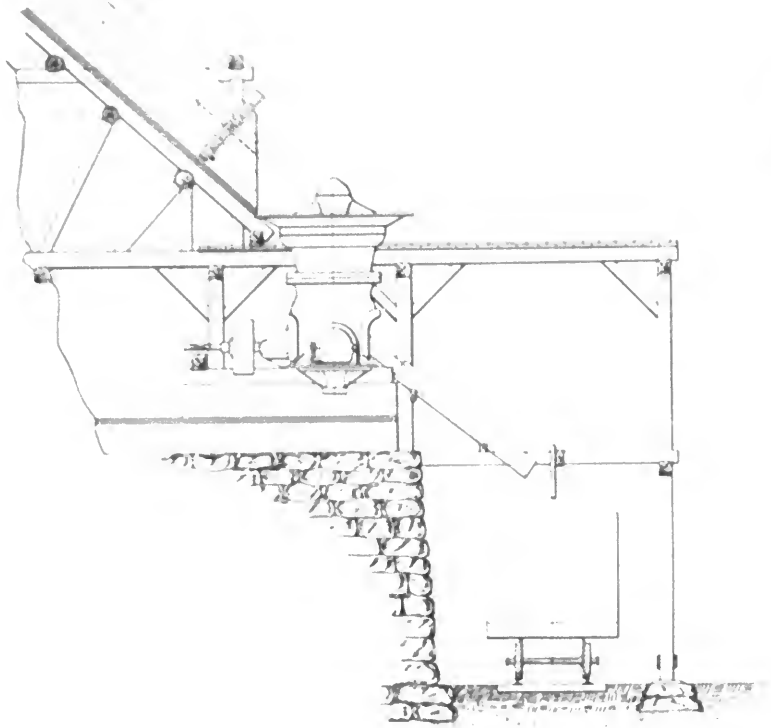


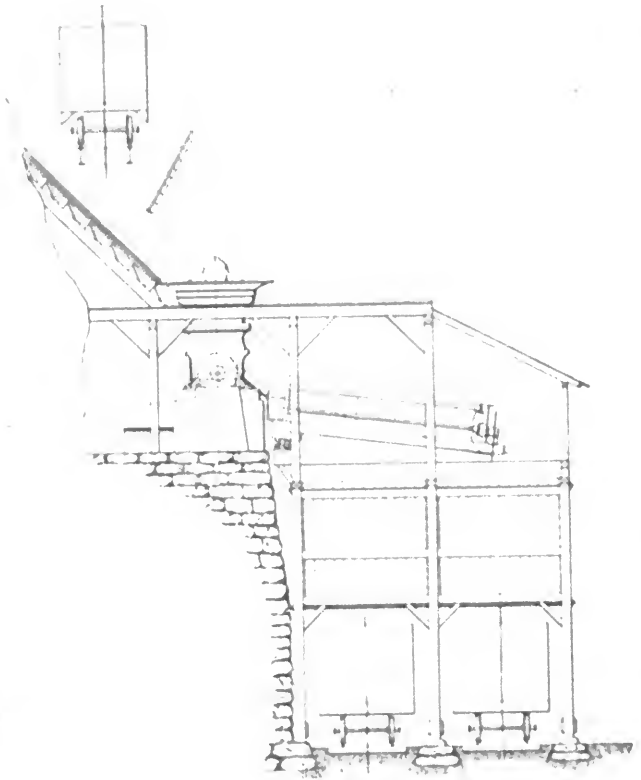
Medium size complete crushing unit on hillside with belt conveyor to sizing screens on large bin



Large complete multiple crushing unit on hillside, with belt conveyor to sizing screens on large cribbed bins with reinforced concrete floor and walls. Four small crushers take rejections from two large screens.



Large McCully crusher plant with direct spout into railroad cars.



Large McCully crusher plant with revolving screen over framed bins. Crusher with side discharge arranged to drive screen direct from countershaft

Information Required for Making Estimates on Crushing Plants

1. What is the character of the material to be crushed?

2. Is the material inclined to break into flat pieces?

3. What amount of material, in tons or cubic yards, is to be crushed per hour?

4. Through what size of ring is it desired to pass approximately the entire crushed product?

5. How many and what sizes of product do you wish to produce?

6. Is it desired to return the oversize or rejections to the initial Crusher to be recrushed or to a separate Crusher for this purpose?

7. What disposition will be made of the fine screenings?

8. Will storage bins be required, and if so, what capacity for each size of material?

9. Do you wish us to include in our estimate, power plant for operating crushing plant, and what kind would you prefer?

10. Is your location a flat or hillside one? If hillside, give us profile as nearly as possible with sketch.

11. Which system of handling rock for the Crusher do you prefer?

    (a) Incline and automatic dump cars.

    (b) Level proposition with end dump cars and tipple.

    (c) Level proposition with side dump cars.

    (d) Overhead cable with skips or buckets.

    (e) Incline chute.

    (f) Incline track with brake.

    (g) Bottom dump cars on tramway.

    (h) Horse and cart.

Information Required for Making Estimates on Crushing Plants

Please fill in ... with your inquiry

1. What is the ...
2. Is the material ...
3. What ... hour?
4. How is ... the crushed ...?
5. How many ...
6. Is it desired to ... to be ... or ...
7. What ...
8. What ... or ...
9. Do ... coal, slag, earth, ...
10. Is your location ... near ...
11. What ...
    (a) ...
    (b) ...
    (c) ...
    (d) ...
    (e) ...
        ...
        ...
        ...
        ...

Index

Adjustment of McCully Crusher 12 17
Back Gear Driving Connections 23
Bearing, Detachable Countershaft 16 17
Belt Conveyors 34 35
Bin Gates 48
Blake Crusher 32
Blocks and Tackles 47
Bucket Elevators 36 37
Cars, Quarry 42 43
Chain Blocks and Tackles 47
Complete Plants, Drawings of 56 67
Concaves or Liners 21
Countershaft Bearing 16 17
Crusher, Blake 32
Crusher, Dodge 33
Crushing Head 19
Crushing Rolls, Superior 30 31
Detachable Countershaft Bearing 16 17
Dimensions of McCully Crushers 50 55
Discharge, Side 10
Discharge, Standard 14
Dodge Crusher 33
Drop Bottom Plate 15
Drum Hoists 44 45
Dust Proof Protection 17
Elevators, Bucket 36 37
Engineering 49
Equipment 22
Fine Crusher, McCully 28 29
Friction Hoists 44 45
Gearing, Steel 15 16
General Description, McCully Crusher 9 22
General Dimensions of McCully Crusher 64 69
Head, Crushing 19
Hoists, Single and Double Friction Drum 44 45
Information Required for Estimates 68
List of Parts 8
Lubricating Oil 22
McCully Fine Crusher 28 29
Material and Workmanship 21
Oiling Devices 17
Overhead Crawls 46
Percentages of Product 26 27
Plants, Complete Drawings of 56 67
Product, Size of 26
Rolls, Superior 30 31
Screens, Standard Pipe Strut Bar Type 38 39
Screens, Roller Type Bevel Gear Driven 40 41
Superior Crushing Rolls 30 31
Supported Type Crushers 11
Suspended Type Crushers 11
Suspension of Shaft at Fulcrum Point 13
Size of Product 24
Table of Sizes, Weights, Capacities, etc 25

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